DOCUMENT RESUME

ED 314 074 IR 053 008

TITLE	Libraries and Technology.
INSTITUTION	New York State Library, Albany.
PUB DATE	88
NOTE	87p.
PUB TYPE	Collected Works - Serials (022) -- Viewpoints (120) -- Reports - Descriptive (141)
JOURNAL CIT	The Bookmark; v46 n2 Win 1988
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	Federal Legislation; Information Dissemination; *Information Technology; Interlibrary Loans; *Library Automation; *Library Networks; *Library Standards; *Long Range Planning; Statewide Planning; Technological Advancement; *Telecommunications; User Needs (Information)
IDENTIFIERS	Linked Systems Project; New York; Retrospective Conversion (Library Catalogs)

ABSTRACT

The 15 papers in this issue report on important aspects of work done by the Statewide Automation Committee (SAC) in preparing the current strategic plan for the use of new technologies by the libraries of New York State, and on some of the innovative uses of technology that the plan seeks to foster and facilitate. The range of the papers reflects the broad range of issues that were included in the deliberations of the committee--matters dealing with legislation; standards and standardization in the context of networking; new pilot projects; the development of communication infrastructures that foster technological innovations; practical problems in managing innovative efforts; and pioneering uses of new technologies in libraries of all sorts. Specific topics addressed include statewide retrospective conversion projects; the development of telecommunications facilities; future plans to establish a statewide library network to link local and regional systems and provide integrated services; the Linked Systems Project (LSP); and the work of the Telecommunications Task Force, which was established to help facilitate the plan outlined in the SAC report, "Libraries & Technology: 1988." (SD)

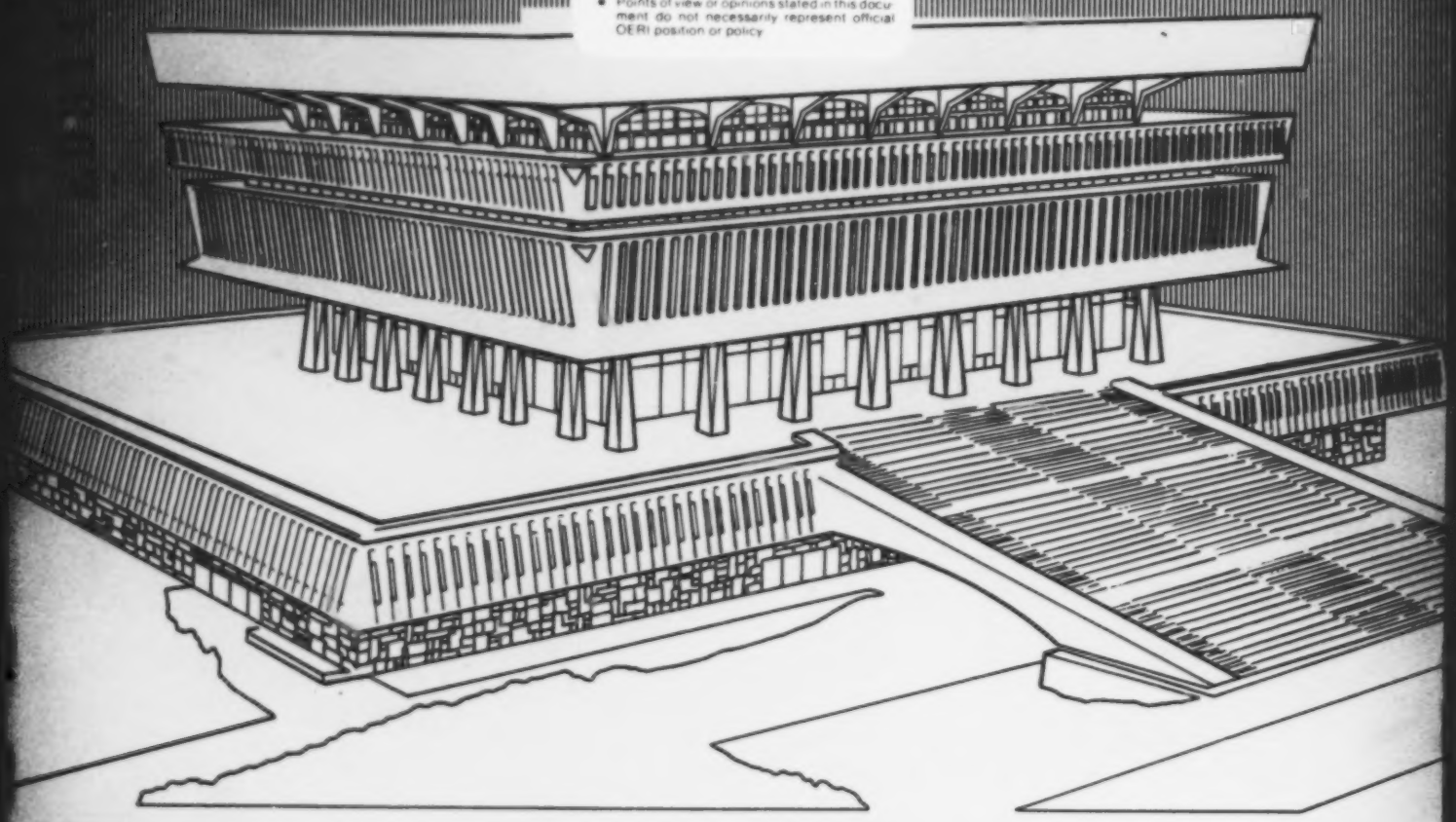
****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.



The Bookmark

THE UNIVERSITY OF THE STATE OF NEW YORK / THE STATE EDUCATION DEPARTMENT / THE NEW YORK STATE LIBRARY

IR053008

Libraries & Technology

Libraries and Technology

Winter 1988

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Robert M. Trombly
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABL

THE UNIVERSITY OF THE STATE OF NEW YORK

Regents of The University

MARTIN C. BARELL, *Chancellor*, B.A., I.A., LL.B.	Muttontown
R. CARLOS CARBALLADA, *Vice Chancellor*, B.S.	Rochester
WILLARD A. GENRICH, LL.B.	Buffalo
EMLYN I. GRIFFITH, A.B., J.D	Rome
JORGE L. BATISTA, B.A., J.D.	Bronx
LAURA BRADLEY CHODOS, B.A., M.A.	Vischer Ferry
LOUISE P. MATTEONI, B.A., M.A., Ph.D.	Bayside
J. EDWARD MEYER, B.A., LL.B.	Chappaqua
FLOYD S. LINTON, A.B., M.A., M.P.A.	Miller Place
MIMI LEVIN LIEBER, B.A., M.A.	Manhattan
SHIRLEY C. BROWN, B.A., M.A., Ph.D.	Albany
NORMA GLUCK, B.A., M.S.W.	Manhattan
JAMES W. MCCABE, SR., A.B., M.A.	Johnson City
ADELAIDE L. SANFORD, B.A., M.A., P.D.	Hollis
WALTER COOPER, B.A., Ph.D.	Rochester
GERALD J. LUSTIG, B.A., M.D.	Staten Island

President of The University and Commissioner of Education
THOMAS SOBOL

Executive Deputy Commissioner of Education
THOMAS E. SHELDON

Deputy Commissioner for Cultural Education
CAROLE F. HUXLEY

Assistant Commissioner for Libraries and State Librarian
JOSEPH F. SHUBERT

Director of the State Library
JEROME YAVARKOVSKY

Director, Division of Library Development
ROBERTA G. CADE

The State Education Department does not discriminate on the basis of age, color, religion, creed, disability, marital status, veteran status, national origin, race, or sex in the educational programs and activities which it operates. Inquiries concerning this policy of equal opportunity and affirmative action should be referred to the Department's Affirmative Action Officer, Education Building, Albany, NY 12234.
Phone (518) 474-1265.

NEW YORK STATE LIBRARY

The Bookmark

VOLUME 46 - NUMBER II

WINTER 1988

Libraries & Technology

LIBRARIES AND TECHNOLOGY

CONTENTS

PAGE

Foreword By Joseph F. Shubert 74

Introduction By S. Michael Malinconico 75

Strategic Planning — The 1987 Statewide Initiative By Dinah Lindauer 77

Enhancing the New York State Bibliographic Database By Glyn T. Evans 81

Regional Bibliographic Databases and Interlibrary Resource Sharing — New York State's Commitment to Library Automation By Malcolm K. Hill 85

The New York State Database Development — Anarchy or Advantageous Diversity? By Janet M. Welch 88

Libraries and Telecommunications Networks in New York State By Frederick E. Smith 92

Toward a Library Telecommunications Network in New York State: A Report on the Work of the State Library Telecommunications Task Force By George E. J. Messmer 97

The Role of Standards in Networking By Sandra K. Paul 100

Open Systems Interconnection, the Linked Systems Project and Linking Libraries in New York State By Ray Denenberg 104

Local Systems Implementation of the OSI Reference Model: The NYU/RLG Project By Susan Kallenbach 109

The Linked Systems Project By Teresa Strozik 113

Integrated Library Systems in New York State By William Saffady 120

Computer Technology for Services from the New York State Library By Jerome Yavarkovsky 124

School Library Systems Choose Databases By Cynthia LaPier 128

Index on Disc Converts Periodical Searches From a Chore Into a Popular Pursuit By Linda Locke 135

Summary and Evaluation of New York State LSCA Program, FY-1986 138

Reproduction of articles from *The Bookmark* for educational use, with appropriate attribution of source, is permitted, except that permission to reproduce copyrighted articles must be obtained from the copyright holder identified on the first page of the article.

Joseph F. Shubert and E. J. Josey, *Coeditors*; Alice Britenbaker, *Editorial Assistant*.

Issued quarterly by the State Education Department, New York State Library, Albany. Sent on exchange to libraries. Individual subscriptions within the United States, Canada and Mexico are $4.00 a year; $1.00 a copy. Annual subscriptions outside of the United States, Canada and Mexico are $8.00; $2.00 a copy. Subscriptions are available from Gift and Exchange Section, New York State Library, Albany, New York 12230. Make checks payable to New York State Library.

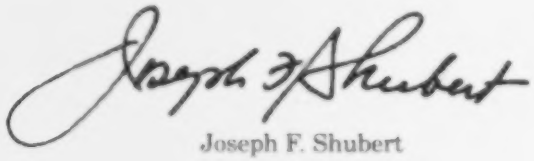
The Bookmark is indexed in *Library Literature*, *Public Affairs Information Service* and *CALL (Current Awareness - Library Literature)*.

 US ISSN 0006-7407

FOREWORD

We are indebted to Michael Malinconico, Dean of the School of Computer, Information, and Library Services at Pratt Institute, who has edited this first issue of *The Bookmark* devoted entirely to the impact of new technologies on libraries and library service in New York State. Dean Malinconico was a member of the 1986-87 Statewide Library Automation Committee, which produced *Libraries & Technology: A Strategic Plan for the Use of Advanced Technologies for Library Resource Sharing in New York State* in mid-1987. He and 14 authors have prepared an important, interesting, and challenging issue.

In addition to the articles which Dean Malinconico discusses in his introduction, this issue also includes an article by Linda Locke on the introduction of computer searching using CD-ROM technology at the Scarsdale Public Library and the FY-1986 report on the Federal Library Services and Construction Act Program in New York State.



Joseph F. Shubert

INTRODUCTION — LIBRARIES & TECHNOLOGY: 1988

The papers included in this issue of *The Bookmark* are a complement to a truly remarkable process that stretched over a calendar year. A group of librarians were brought together in April 1986 by the Director of the New York State Division of Library Development to draft a statewide library automation plan. The plan, which was developed by the Statewide Automation Committee, is remarkable in its coherence and its scope.

Such an effort is heir to twin dangers: the possibility of taking flight on the wings of fantasy; or of surrendering substance to superficialities and platitudes. That the Committee's report, *Libraries & Technology*, avoided both of these pitfalls is a credit to the Committee that prepared it, the able direction provided by its Chair, Dinah Lindauer, the critical contributions made by Roberta Cade, Director, Division of Library Development, who helped to ensure that the committee's work proceeded smoothly and remained focused on its intended target, and Joe Shubert, New York State Librarian, whose timely interventions whenever the Committee was well on its way to irreconcilable impasses kept things running smoothly and on track.

Perhaps an equally important cause is the generally high degree of sophistication in the application of advanced technologies achieved by libraries and librarians of New York State.

The papers in this issue report on important aspects of the work done by the Statewide Automation Committee in preparing the current strategic plan for the use of new technologies by the libraries of New York State and also deal with some of the innovative uses of technology which *Libraries & Technology* seeks to foster and facilitate.

The range of the papers reflects the broad range of issues that was included in the deliberations of the Committee — matters dealing with legislation, standards and standardization, innovative pilot projects, the critical communication infrastructure needed to make many of the plans a reality, the practical problems associated with managing an effort such as that envisioned in the State Plan, and pioneering uses of new technologies in libraries of all sorts.

Some of the writers, though by no means all or even the largest number of them, served on the Committee. (See Dinah Lindauer's article for a roster of the individuals who comprised the Committee.) It is informative to compare the articles written by members of the Committee with those by persons who did not serve on the Committee and, most important, with *Libraries & Technology*. The reader will find a fascinating interplay of potential, reality, nascent reality and further evidence of the soundness of the State Plan.

Dinah Lindauer, Chair of the Committee, describes the process that resulted in a blueprint for the coherent exploitation of new technologies in a State which already boasts one of the best developed library infrastructures in the nation. Glyn Evans, SUNY Assistant Vice Chancellor for Library Services, discusses plans for further enhancing the State's machine-readable bibliographic database and the very difficult problem of establishing criteria for deciding which data conversion efforts are to be supported with scarce public resources.

Malcolm Hill, Director of the Four County Library System, discusses the principal New York State legislation which has provided funding for development of the State's database and for the facilities to exploit that resource. He evaluates the effectiveness of this legislation and identifies some areas that should be addressed in future versions of legislation. Janet Welch, Executive Director of the Rochester Regional Library System, makes some interesting observations about what needs to be done in order to manage the development of a statewide bibliographic database effectively.

Fred Smith, of the State Education Department Division of Library Development, reviews for us the state of development of telecommunication facilities which can serve as the infrastructure to create, link and provide access to the emerging statewide bibliographic database. George Messmer, also of the Division of Library Development, complements Smith's observations by discussing the future plans to establish a statewide library network to link local and regional systems and provide integrated services, and the work of a new task force, the Telecommunications Task Force, which was established to help translate the recommendations of *Libraries & Technology* into reality.

Sandra Paul, of SKP Associates, provides a comprehensive overview of the standards-making process, the importance of standards in the development of networking, and the work of the National Information Standards Organization (ISO). Ray Denenberg helps to clarify the details of a stan-

dards effort which is of major importance for development of computerized bibliographic networks — indeed for computerized networks of any kind. Denenberg also discusses a major national effort, the Linked Systems Project (LSP), to implement a suite of standards that conform to the general prescriptions of the OSI Reference Model.

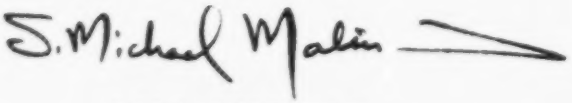
Susan Kallenbach, Director of Technical Services for New York University, describes a practical implementation of the Linked System Project standards. Teresa Strozik, Associate Director for Network Development for the State University of New York, provides some perspective on the LSP, evaluates it from the perspective of the existing networks and discusses the significance of this undertaking.

Finally, we have three articles on the state of implementation of the new technologies. In the first of these, Bill Saffady, Professor, School of Information Science and Policy, SUNY Albany, reviews the current state of development of integrated systems. It is a major hope of the statewide library automation plan that the standards and experience necessary to link together disparate systems into smoothly functioning integrated systems will be developed sooner rather than later. If the actions that follow from the recommendations made in *Libraries & Technology* lead to the development and adoption of standard interfaces among individual automated systems, New York State will have made a contribution to librarianship of inestimable value.

In the second, Jerome Yavarkovsky, Director of the New York State Library, describes the automated services currently supplied by the State Library. The State Library represents an important bibliographic resource for the libraries of New York State. Technology now gives librarians and library users the possibility to gain ready access to information about those resources from any place in the State a telephone line can reach. In addition, the State Library as a switching node will very likely be greatly enhanced by the ready availability of machine-readable bibliographic data and sophisticated communication facilities.

Finally, but by no means least, is an article by Cynthia LaPier, Director, Schuyler-Chemung-Tioga BOCES School Library System, in which she appropriately talks about the future — not the technological future, but how we can begin to introduce the next generation of students, scholars and library users to the information services that will be an omnipresent reality in their lives.

Not all readers will agree with all of the views expressed in these articles, nor with all of the recommendations made in *Libraries & Technology*. Nonetheless, few will fail to be stimulated and challenged by them.



S. Michael Malinconico
Guest Editor

STRATEGIC PLANNING — THE 1987 STATEWIDE INITIATIVE

By Dinah Lindauer, Chairperson,
Statewide Automation Committee

The average moviegoer leaving a screening of the film *Wall Street* is likely to remember two ideas powerfully expressed by Michael Douglas — the motivating drive of greed and the paramount importance of timely information. While greed is not a term likely to be linked to libraries, the, by now, platitudinous information explosion of the past 20 years motivated the library world to use dramatically new technologies to automate operations, trying to cope with the flood of information and still maintain and improve the quality of library service.

BASIS ESTABLISHED IN 1986

Technology efforts in New York State's libraries during this period were linked to resource sharing through library systems and to using automation to increase efficiency and decelerate cost increases while meeting the Regents goal of providing timely and free access to a full range of information resources. In 1986 the Regents adopted a three-part program for automation described on page 19 of *Library Service to the People of New York State*, "Library Resources Sharing in New York State and Technological Change." It called for:

- Continued development of a statewide database of machine-readable bibliographic and nonbibliographic records resident in several computer systems and utilities with the expectation of linking these regionally, statewide, and nationally;
- A statewide library telecommunications network to link local and regional systems, to provide access to national networks, and to provide integrated services using the library database and communications network;
- A strong and formal automation consulting capability within the State Library, and through an informal network of practitioners in the State.

In keeping with the Division of Library Development's long tradition of collaborative forward planning by the Department with the field, Director Roberta Cade appointed a 16-member Statewide Automation Committee in April 1986. Its members were broadly representative of automation concerns and expertise in all types and levels of libraries. The members are listed at the end of this article. The Committee was asked to: review and update a 1984 draft automation plan; develop and incorporate new material necessary for future automation activities; and recommend priorities for implementing the program.

1987 REPORT, LIBRARIES & TECHNOLOGY

Despite the daunting complexities of the assignment, the Committee was able to complete its work in little more than a year's time. Its report, *Libraries & Technology: A Strategic Plan for the Use of Advanced Technologies for Library Resource Sharing in New York State*, was issued in May 1987 with 20 recommendations for accomplishing the three Regents-adopted automation action programs. (Copies are available from the Division of Library Development, attention George Messmer, New York State Library, Cultural Education Center, Albany, New York 12230.)

Since the report was issued, the plan has been accepted as a valuable keystone statement that will be followed this year by additional reports with increased specificity. It is therefore useful to review how the Committee approached its work, what steps were taken to incorporate broad input from the field, and how consensus was achieved for automation issues that could meet the vastly differing needs of New York's 7,000 libraries.

STAGES OF ACTION BY AUTOMATION COMMITTEE

The Committee started by reviewing the background of the 1984 draft plan and all of the written responses that had been received to it. In addition, status reports were regularly received on a range of statewide studies then planned or underway, as well as changes in regulations, legislative proposals or new policy guidelines likely to have an impact on automation issues. These included:

- Interlibrary Loan Redesign Study and recommendations for implementation
- LSCA Policy Guidelines covering automation programs and standards
- Reference and Research Library Resource Council five-year plans
- Regional Automation Grant regulations reflecting 1986 legislative changes

The Regents three-part program provided an obvi-

Libraries & Technology

A Strategic Plan for the Use of Advanced Technologies for Library Resource Sharing in New York State

ous framework for a preliminary work plan. Therefore, three subcommittees made the first approach to consideration of issues involving database, linkage and training respectively. Concurrently, the field was asked for comments reflecting technology concerns since the 1984 draft.

For those who have had experience on advisory committees and boards, it is worth noting the rigorous work contributed by each member of the subcommittees. Realistically, participation is usually limited to showing up at meetings and responding to papers prepared by staff or consultants. The Automation Subcommittee members themselves produced a wide range of position papers reflecting their insights from special constituencies and from personal viewpoints and expertise. The Chair of each subcommittee — Glyn Evans for Database, Susan Kallenbach for Linkage and Susan Besemer for Training — used the papers and small-group negotiation to produce reports that were then honed by full committee discussion into draft recommendations for field reaction.

Field hearings in December 1986 at three locations (Buffalo, Albany and New York City) produced responses and suggestions for changes or clarification from the 110 persons who attended. After detailed review of the suggestions, the Committee completed its work in February 1987 by identifying the tasks that still needed to be accomplished:

- Development of evaluative criteria and procedures that the regions and the State Library can use for assessing the value of bibliographic and location data proposed for the database;
- Work necessary to relate library planning to rapid developments in telecommunications;
- Standards and specifications needed to ensure the exchange of information from computer system to computer system, with a model representing a typical networking configuration; and
- Additional specific operational planning and estimation of implementation costs.

The Committee's final report with 20 recommendations was presented to Commissioner of Education Thomas Sobol at a formal ceremony in Albany in July 1987. The occasion was videotaped and later shown at a statewide closed-circuit videoconference in September. Individuals at PBS stations all around the State were able to question key Committee members and Department staff about the report. In preparation for the videoconference, the printed report had been widely disseminated through systems.

DISCUSSION OF THE COMMITTEE'S RECOMMENDATIONS

Libraries & Technology outlines directions for library automation development supported through State and Federal funds through 1989. The report reminds us that automation is not, in itself, a goal of libraries, but rather a means to an end — namely, providing library services. The State level automation goals, stated on page 5 of *Libraries & Technology*, are to facilitate:

a. access to information by all residents of New York State — both to information traditionally available in libraries and to current information and referral services;

b. availability of information for the State's continued economic development;

c. resource sharing by libraries within the State;

d. cost-effective library operations in New York, guaranteeing optimum benefit from State and Federal funds;

e. access to information outside New York via links to other state, regional and national systems.

The report goes on to emphasize that the context for resource sharing and automation in this State is grounded in 35 years of system development and the acknowledgement of significant local and regional differences. Through December 1986, $13.3 million in State and Federal grants had been provided to support automation programs. The 1984 Regional Data Bases and Interlibrary Resources Sharing Program required library systems in each of nine regions of the State to develop plans that meet national and State standards. Subsequent reports identified a universe of 65 million monographic holdings records of which 32 percent, or 21 million, were then in machine-readable form; there were an additional 800,000 serials records, or 72 percent of an estimated 1.1 million records, in machine-readable form in a variety of automated networks. In detailing the national and statewide resources providing a foundation for future automation planning, brief summaries and statistics (through March 1987) are provided for: OCLC (Online Computer Library Center); RLIN (Research Libraries Information Network); MILCS (Metropolitan Interlibrary Cooperative System); RML (Regional Medical Library Network); and NYSL (New York State Library). Telecommunications briefs report developments in NYSERNET, SUNYNET, TNT (Technology Network Ties), as well as progress on other sophisticated statewide network projects.

"...continued diversity...rapid changes...sophistication...."

One of the most important sections of *Libraries & Technology* is an affirmation of basic assumptions and principles derived from prior experience and observation of trends. The assumptions recognize that there will be continued diversity of approaches to automation, rapid changes in technology, cost volatility and increasing sophistication of users. The principles stress the need to adhere to national standards, to decrease costs by building on data already available, to target funds to projects that facilitate resource sharing and make bibliographic data freely available, and to recognize that the principal goal is to provide access to information resources for users. The 20 recommendations begin with three general mandates that urge: 1) development of an operations and financial implementation plan; 2) assumption of a library leadership role in telecommunication; and 3) the convening of a biennial review committee. In five recommendations on database development, the report gives high priority to a balanced database and urges increased State-level leadership in the regionally administered programs. Recommendations for linking library computer systems call for using international telecommunications standards endorsed by the Library of Congress. Consulting and training recommendations include proposals involving library schools, SED-produced training packages, advanced technology internships and information on deep volume discounts on software and hardware.

Four of the 20 recommendations call for the appointment of task forces to complete specific work based on the report. Task forces were appointed in July 1987 and began immediately to address their assignments with reports targeted for mid-1988.

Finally, the report closes with priorities for: increased funding for automation; development of telecommunications services; continued database development with appraisal procedures and criteria for planning; more effective working relationships among systems; establishment of a Linkage Standards Task Force; DLD dispensing of technical information on vendors and standards; and increased cooperation to meet training needs.

IMPACT OF THE REPORT

In the year since the report was completed, its impact has already begun to be evident. While work is under way by the four task forces set in motion by the report, the recommendations have already effected changes in the guidelines for LSCA Title III projects, the hospital libraries program, the regional database programs and the Regents legislative proposals.

"...biennial review...to assess the impact of the report and fine-tune its directions."

Library automation efforts around the State have progressed to a mature stage of growth reflecting not only the rapidly changing technology, but more widespread local and regional experience with

automation systems. Older automated systems are being replaced with those that can provide even greater cost effectiveness and sophistication. While State-level guidance and leadership may in turn be requested, tolerated, ignored or rejected in the local process of choice, it is useful to have the overarching policy statement that *Libraries & Technology* provides. The attempt to take a proactive role in guiding library automation in the State not only links New York to national efforts, but hopes to set a standard for the technology industry to meet in the New York market. The mandate for a biennial review can provide an ongoing opportunity to assess the impact of the report and fine-tune its directions.

MEMBERS OF THE STATEWIDE AUTOMATION COMMITTEE (with 1987 affiliations):

Dinah Lindauer (Chair), former Assistant Director, Nassau Library System

Beatrice Angus, Coordinator, Madison-Oneida Area BOCES School Library System

Mary Beth Beidel, Coordinator, Automated Circulation Services, Brooklyn Public Library

Gregory Benson, Jr., Director, Center for Learning Technologies, State Education Department

Susan P. Besemer, Associate Director, E.H. Butler Library, State University College at Buffalo

Stephen B. Bolton, Consultant, North Country Library System

Ruth Brown Chamberlain, Director, Southeastern New York Library Resources System

Glyn T. Evans, Assistant Vice Chancellor for Library Services, State University of New York

Maurice J. Freedman, Director, Westchester Library System

Linda Espenshade Heinemann, Assistant Director, Technical Services, Four County Library System

Susan Kallenbach, Director, Technical and Automated Services, New York University

S. Michael Malinconico, Associate Director, Technical Services and Automation, The New York Public Library

Wallace D. Mohn, Deputy Director, Supportive Services, Buffalo and Erie County Public Library

James Morgan, Director, Special Projects, South Central Research Library System

Marsha Ra, Assistant Chief Librarian, Technical Services, City College of New York

John Richardson, Chief, Catalog Services Division, Suffolk Cooperative Library System.

ENHANCING THE NEW YORK STATE BIBLIOGRAPHIC DATABASE

By Glyn T. Evans,
Assistant Vice Chancellor for Library Services,
State University of New York, Albany

The library community at large, and a growing segment of the business, educational and political communities, are beginning to appreciate the value of major information databases. As economic needs change, and the community responds to difficult, unexpected and almost unprecedented conditions, the need for, and the value of, timely information is apparent. This is as true for information about information contained in library bibliographic databases as for stock exchange or physical data information.

The library community is unusual among large industry and database groups in that it is blessed with a series of standard data descriptions (the MARC formats and AACR2) which are not only national but international in scope and acceptance. One acknowledges farsighted work by the Library of Congress and the professional associations in the 1960s and 1970s when we, in effect, took control of our own technical future. If you have attended meetings of other groups such as state interagency committees, or industrial groups, as I have, you will have heard the frustration among information practitioners at the impossibility of fulfilling missions and meeting targets in the absence of constant data descriptions, and their surprise, envy even, that the library community has been, and is, developing such an essential, common, information resource.

"...constant need for retraining as systems change."

The phrase "taking control of our own technical future" goes beyond the development of formats. It is quite notable that the great facilitators of bibliographic database development — OCLC, RLG, UTLAS, WLN — are, or grew from, not-for-profit educational endeavors, sponsored and supported primarily by academic libraries with some limited public support from Federal, state and foundation resources. But the great supporters were, and are, libraries and librarians with responsibility for and to their own institutions and with the vision and, yes, sometimes courage, to look ahead and recognize the essential nature of cooperation.

The investments went beyond joining, say, RLIN or OCLC, sending people to planning and advisory committees, and working on standards committees, MARBI, and other professional bodies. As systems were initiated, regional network groups formed and networks began massive, patient, training programs for professional and support staff alike. Further, there has been the constant need for retraining as systems change. Many will remember the conversion from AACR1 to AACR2 when OCLC shut down for 12 days in December 1980 to correct and reconfigure its 7-million-record database; and SUNY/OCLC, with help from others, including of course LC itself, retrained some 400 library staff from 175 institutions in the new rules. [In 1986-87, OCLC has done a second conversion in the background without shutting down service, changing between 11/86 and 7/87 over 850,000 headings to bring them up to date with latest authority work.] It was libraries that provided the main fiscal and intellectual support for all these efforts and brought us so far.

How far? Well, no one knows for sure, but there are at least 25 million bibliographic records, and probably closer to 30 million records, online in the various major systems describing library holdings in New York State. SUNY/OCLC, for example, celebrated the addition of the 20 millionth record to its archive of holdings of 192 of its 288 libraries on June 25, 1987 — and that file alone grows by some 650,000 records every quarter. This simple paragraph does display one of the problems, that of definition. Bibliographic records means just that, one record to describe one unique bibliographic entity, with no knowledge of how many titles are represented in the archival database only once by one copy or 500 times (by 500 records in the total) among the contributing libraries. Whatever the definitions, the achievement is magnificent, a signal community contribution made by the libraries.

Beginning with its support for Union List of Serials input, all records now being input into OCLC through the reference and research library systems programs, and since 1984 with the automated database funding, the New York State Education Department (SED) has increasingly supported local data input into the various major databases. It is estimated that 3.4 million records have been entered under the programs so far. This is clearly a very wise investment of public monies. It builds on the assets of past investment, a trained work force, good support mechanisms, data standards, established and current technology, and

the sense of participation in and belonging to an international, as well as a national, movement. The investment displays a timeliness that matches the social and economic needs of New York State at this time of attention to economic revitalization and increased competitiveness in a growing-smaller world.

LIBRARIES & TECHNOLOGY

A major set of recommendations, Numbers 4-8, of the *Libraries & Technology* report are concerned about the future of database development. They are correctly placed immediately after the general basic recommendations; the database is the bedrock upon which the other two, Linking and Consulting & Training, lie. That set of Recommendations forms a logical sequence which should be read hierarchically to be appreciated. Before discussing the recommendations, a few background notes are important.

There have been, historically, competing claims for support under the database development program. On the one hand, there is the need to enrich the database with new titles, new items recorded for the first time. It appears that the largest concentration of such titles is in the New York Metropolitan area. At the same time, holding locations for ILL and resource sharing purposes are also important, and very valuable, within sparsely populated areas upstate.

Second, it became clear that there was uncertainty among both applicants and evaluators about the selection criteria on a case by case basis. How could a library express the importance of its claim? How could the reviewer respond?

Another critical point is that we are dealing with the statewide investment of money to develop a statewide resource, even though administered, in the first place, locally. There is not yet a common statewide database, but the Linkage and Telecommunications Task Forces are working to that end. The Database group relies on the completion of that work and concentrates immediately on input into that recognized database with which the applicant library is affiliated. Linkage will subsequently establish the statewide database through incorporation of its separate components.

The first recommendation in the database series is Number 4 of the entire report and properly defines the database itself. The definition effectively limits itself to records created by libraries to describe library holdings, ancillary data such as authority files, and community and data referral information created by libraries or library agencies. It recognizes secondary databases such as Abstracting and Indexing services as a source for interlibrary loan requests based on holdings found in the bibliographic database. Finally, the database is placed in its national and international context.

The second recommendation (#5) recognizes statewide leadership coupled with regional administration, and states that "increased use of appraisal procedures at the regional level can mediate competing interests and ensure the feasibility of accomplishing the goals within available funds."

Recommendation 6 defines unique, scarce and ubiquitous items and states the need to ensure reasonable balance among these classes of items. Later in this article, I will discuss subsequent work on this aspect by the Criteria Task Force.

Next, Recommendation 7 goes further in adding criteria which further define reasonable balance by adding additional criteria for qualification for statewide support. They are: likelihood of use; value to State economic development; contribution to research and scholarship in all disciplines; and number of users served by the database. These may sound innocuous but they are seen as valuable discriminators which will help appraisers of applications apply some consistent, rigorous standards to their judgments.

Finally, Recommendation 8 ensures that current cataloging will be continued, the database be maintained and secure and, most important, that institutions provide access to materials listed in the database within reasonable performance standards.

CRITERIA TASK FORCE

After Commissioner Sobol accepted the report in 1987 and the report was published, the director of the Division of Library Development established a set of Task Forces; they are still at work in March 1988. The Criteria Task Force has concentrated on establishing evaluation criteria for "candidate collections."

The Task Force reaffirmed that it is seeking criteria which will develop the statewide asset of the data. Data entered in the field of, say, electronic engineering will benefit library users in many communities in the State. It also recognized that in many ways some of the problems which seem so critical are really temporal issues. As highest priority is given to the addition to the database of unique or scarce materials, records entered subsequently are more likely to be additional holdings records added to already created bibliographic records. Further, the existence of one location which can be reached by ILL is of greater utility to the inquiring user than adding to the holdings records yet another copy of, say, *For Whom the Bell Tolls*. The report also recommends that uncataloged materials be considered for inclusion, contrary

to current policy. Further, it realizes that reasonable balance of grant awards each year is not a goal to be sought. It does accept that over time as candidate collections are brought into the database, and through the sum of nine sets of regional decision making, reasonable balance will occur through normal growth and activity. Recommendation 8 establishes performance standards attainment of which must be demonstrated by libraries seeking State support.

The Task Force had considerable discussion of the definition of database hosts which would be considered for inclusion in the statewide database. The following criteria were established and will be included in the Task Force report:

A database to which records may be added will be a component of the Statewide Database. In order to qualify as a recipient of records for the Statewide Database, a vendor or utility must meet the following:

a. Be accessible by all libraries in the State via a standard data-telecommunications process.

b. Accept new records either directly or by tapeload from local systems.

c. Record and display holdings statements for all physical media including serials.

d. Its participating libraries must lend materials through an electronic system.

e. Its participating libraries must meet performance standards established in Recommendation 8 of *Libraries & Technology*.

f. Qualifies to be linked with other vendors or utilities when this opportunity becomes available.

This definition excludes offline vendors such as Bibliofile and Marcive. January 1, 1991 should be established as the date by which any system or library must be using a vendor or utility which meets the aforementioned criteria in order to continue to qualify for funding from the Regional Bibliographic Data Bases Program.

The major effort of the Task Force has been to establish appraisal methodology. The work took two forms, one the development of numerical values to evaluate the criteria in Recommendation 7, plus requiring that libraries submit supporting statements. It is expected that these statements will contribute to the appraiser's knowledge of the candidate collection potential and will assist decision making in cases where selection decisions are very close.

The second is some work done on sampling techniques against the existing database into which records will be entered, i.e., the database with which the requesting library is affiliated. A study which determined the uniqueness of serials in the Westchester (public) Library System by D. Matta was supplied to the Task Force by member M. Friedman. The methodology suggested is that a library take a random sample from its candidate collection and search it against the selected database, recording numbers of anticipated Unique (unique to both the database and unique to New York), Scarce or Ubiquitous records. The evaluations will establish scores for contribution of records of each category — Unique, Scarce and Ubiquitous — to the database. It is further recommended that grants be awarded at appropriate differential reimbursable rates for each group (i.e., Unique, etc.) of material in the candidate collection, in recognition of the different volume of work involved in their addition to the database.

A test was performed of the methodology at SUNY/OCLC. Jane Fontana, a library school student from Manchester, England, visiting the Network, drew, using a random number table, a set of 500 titles from the SUNY/OCLC TOPCAT [Carlyle] database which contains the holdings of SUNY Oswego, SUNY Purchase and Williams College. The sample was passed against the OCLC database according to the methodology above, with the results shown in Table 1.

TABLE 1
FONTANA REPORT — TOTALS

Category of Item Characteristic	Subsets of Titles Searched 1st 100	2nd 100	3rd 100	4th 100	5th 100	Cumulative	Percent of Total
Unique	6	8	14	7	14	49	9.8
Scarce	24	24	21	16	28	113	22.6
Ubiquity	70	68	64	76	57	335	67
Not in TOPCAT	0	0	1	1	1	3	0.6

N.B. This study was performed before the separation of responses into "Unique to Database" and "Unique to New York" was made. This report concerns itself with "Unique to Database."

It was also found that even with a beginning searcher (Ms. Fontana), it took under two hours to search 50 titles. Thus, it is not a lot to expect of a library to search a sample in support of its application. The data gathered from the Fontana study have been further analyzed by a statistician to determine a scale of sample sizes relative to the size of the candidate collection. It has been found that a sample of 269 records, regardless of collection size, will yield results with 95 percent confidence and 5 percent error rate at the "Scarce" definition group. This sample will be required in grant applications.

The result of this work will be a grant application

process which will require libraries to assess the contribution its candidate collection will make to the statewide database in all the criteria recommended in the *Libraries & Technology* report. As of March 1988, seven libraries are performing a field test of a proposed application procedure against a total of nine databases. The Task Force will review results and expects to complete its work by April 30, 1988.

The grant evaluators will combine both the unique sample and the numeric assessments into a combined rating score to decide which grants will be awarded and at what amount, always assuming, of course, that other necessary criteria are met. The evaluators will also review the access and performance statements supplied by each applicant.

Finally the Task Force recommends periodic review of the results of the criteria and the effect on the database of new entries with the possibility of further fine tuning the procedures to improve the process of enhancing the statewide database.

CONCLUSION

This paper began with a global review of the historical growth of library bibliographic databases and an appreciation of their value to society; continued with a statement of public policy regarding further database development from the report *Libraries & Technology*; and ended with a detailed account of work in progress to enhance and encourage that development. It is too soon, of course, to note results, but it does appear that a fair, rational way of evaluating database applications is being developed, a way which it is hoped will reward both the fiscal investments made by the State and the fiscal, physical and intellectual efforts continually made by the libraries in order to improve this significant community resource.

REGIONAL BIBLIOGRAPHIC DATABASES AND INTERLIBRARY RESOURCE SHARING — NEW YORK STATE'S COMMITMENT TO LIBRARY AUTOMATION

By Malcolm K. Hill, Director,
Four County Library System, Binghamton, NY

The New York State Library and its Division of Library Development have long recognized the importance of automation as a valuable tool for improving library efficiency and for library resource sharing. It is in the latter context that the Regional Bibliographic Data Bases and Interlibrary Resources Sharing Program has been developed.

CONVERSION TO MACHINE-READABLE DATABASE

The precursor to any library automation activity, on a local, regional or national scale, is the creation of machine-readable bibliographic data. More than a decade ago the annual publication *Library Service to the People of New York State* recognized the importance of "the development of a statewide retrospective database of monograph holdings," as well as the need for continued work on machine-readable serials records. Beginning in the late 1970s, the Division of Library Development began directing large amounts of Library Services and Construction Act (LSCA) funds to retrospective conversion projects, especially but not exclusively of public library holdings. A joint project of the Finger Lakes, Chemung-Southern Tier and Four County library systems converted more than 1.3 million system and member library holdings between 1980 and 1985. The development of the MILCS (Metropolitan Interlibrary Cataloging System) database in New York City was also accelerated during this time, and a number of other retrospective conversion projects, using LSCA Title I and also later Title III funds, began to address the problem of converting an estimated 176 million items of library materials to machine-readable form.

RBDB & ILRS LEGISLATION

There was widespread recognition that LSCA funds alone could never address the magnitude of this problem; nor was the Federal program a viable source of operational money to maintain and use the growing statewide database. The 1984 Regents Legislative Proposal for Libraries (as had the 1982 and 1983 proposals) included the Regional Bibliographic Data Bases and Interlibrary Resources Sharing (RBDB & ILRS) Program, which provided State funds on a consistent basis for the development of library automation programs, when it became Chapter 348 of the *Laws of 1984*. The funds, set initially at $1.3 million per year, were awarded competitively on a regional basis. The legislation called for the development of a five-year automation plan for each region, prepared jointly by the directors of the public library systems and the reference and research library system in each region. Each region also had to designate a legal agent, which could be either a public library system or a reference and research library system, to administer the funds.

The RBDB & ILRS program broke important new ground in several areas. For the first time, money became available for "access," which meant that significant equipment purchases and some operational expenses became eligible for funding. Academic libraries were drawn into the mainstream of monographic retrospective conversion. (LSCA Title III funds had been used almost exclusively for union list of serials projects.) The regional funding also permitted serious and coordinated assessment of the status of library automation activities within each region and an inventory of the needs, first regionally and ultimately statewide. The reporting mechanisms which were developed permitted the Division of Library Development to frame subsequent legislative proposals and to identify issues now cited in *Libraries & Technology*, the statewide automation plan.

"A new component of the 1986 legislation [was] automation funding to public library systems."

Chapter 37 of the *Laws of 1986* expanded and changed the RBDB & ILRS program in both scope and direction. The existing $1.3 million appropriation for regional activities was expanded by 25 percent, and the law specifically directed that the money was to be paid to the reference and research library systems, rather than a regionally selected fiscal agent. In addition, the regional plan, which previously required formal approval by the directors and boards

of each region's public library systems, now required only the "participation of other library systems in the region," including the emerging school library systems. A new component of the 1986 legislation was the extension of automation funding to public library systems. Following two-year pilot projects at the Mid-York and Four County library systems supported by independent legislative initiatives, each public library system was awarded an annual grant of $60,000 "to support bibliographic control and interlibrary sharing of information resources of member libraries, and to coordinate and integrate the automated system or systems of such member libraries." In addition, $100,000 per year was made available for project proposals submitted to the Division of Library Development by public library systems. Regulations governing this program have been sufficiently flexible that public library systems have been able to develop a variety of automated services and programs according to local needs.

Without question, the RBDB & ILRS program has filled a critical need in New York State. The State has such a rich heritage of library resources of all kinds that uncoordinated local automation efforts cannot possibly address the magnitude of the difficulty of making all the State's resources available to all the State's residents. However, there have been some problems with the program, and it is to be hoped that some of these can be addressed in future years. They include: 1) insufficient funds; 2) inconvenient funding and expenditure schedules; and 3) governance issues.

PROBLEMS: INSUFFICIENT FUNDS

By the end of 1986 the Division of Library Development had provided a total of $13.3 million in State and Federal funds to support library automation activities, yet less than 40 percent of the State's 65 million monographic holdings records were in machine-readable form. It has been suggested that the conversion of records in New York City alone could swallow every cent of existing automation funding for years to come! In the public library system component, funds are clearly inadequate. A systemwide automation program cannot be operated on as little as $60,000 per year, and systems are forced to draw heavily on other operational funds to support their programs. Finally, the conversion and automation needs of the school library systems and their constituents are only now coming into full focus. Today they need conversion funds; tomorrow they will need operational funds to maintain a viable automation program for their membership.

INCONVENIENT FUNDING AND EXPENDITURE SCHEDULES

Although RBDB & ILRS is an annual program run on a calendar year basis, the funds are driven by the State's fiscal calendar, which begins on April 1. The nature of the State bureaucracy ensures that the funds do not actually arrive in the field until midyear at the earliest. In addition, it is State Education Department policy that funds must be entirely expended within the calendar year that they are appropriated. The results are detrimental to the smooth operation of the program. First, projects such as retrospective conversion can commence early in the year only if the sponsoring institution can commit its own resources to advance-fund the activity until State funds arrive. Otherwise, full-year projects become half-year projects by default, and year-to-year continuity becomes a problem. Second, the "clean out the cash drawer" policy means that funds cannot be accumulated to pay for expensive equipment, which is an important drawback in the capital-intensive environment of library automation.

GOVERNANCE ISSUES

The original 1984 legislative language for the RBDB & ILRS program presented a truly regional approach, with governance, plans and activities managed by a consortium of system directors, all of whom had to formally approve program actions. Changes in 1986 law and regulation placed the larger regional funding entirely under the jurisdiction of the reference and research library systems, with only "consultation" required of public and school library systems. The result in some parts of the State has been a diminution of the "regional" aspects of the program, in the sense that funds distribution by type of library has been skewed.

"...continued and expanded State-level support is critical."

What is the future of the Regional Bibliographic Databases and Interlibrary Resource Sharing program? Legislative proposals for 1988 would alter and expand the RBDB & ILRS program. Both proposals call for major funding increases for the regional programs managed by the reference and research library systems. One proposal would also increase public library system automation grants by 66 per-

cent and provide similar though smaller grants to school library systems. The other proposal calls for more modest increases in automation funding for those types of systems and shifts the funding from the regional program into formula aid, which has traditionally gone to basic operating support. Automated functions will be ubiquitous in libraries of the future, and continued and expanded State-level support is critical. The key issues are adequate funding, equitable governance and sufficient flexibility to allow all participating institutions to use the funds according to their evolving and diverse needs.

THE NEW YORK STATE DATABASE DEVELOPMENT — ANARCHY OR ADVANTAGEOUS DIVERSITY?

By Janet M. Welch, Director,
Rochester [NY] Regional Library System

"Database anarchy" is a phrase sometimes used to describe the status of national machine-readable bibliographic database development.[1] In New York State considerable effort and millions of dollars have been expended in an attempt to create order out of anarchy — to develop a coordinated, coherent approach to database development in order to improve user access to library materials. This article describes the history, funding and problems inherent in this statewide effort. It envisions a future of continued database development, with increased emphasis on linking, telecommunications, document delivery, compensation and user needs for information as well as specific library materials.

WHAT IS THE NEW YORK STATE DATABASE?

One of the first questions submitted to the Statewide Automation Committee in a recent discussion of its 1987 plan, *Libraries & Technology*, was: "Since there is no single, integrated physical file of machine-readable library holdings in New York State, what is the New York State database?" The database as conceived and funded in New York State is a "logical" database, rather than a single, physical database and reflects both the current decentralized nature of our bibliographic systems and the belief that a single physical database is unnecessary. Just as it is unlikely that there will ever be a single national file of bibliographic records, it is also unlikely that there will ever be a single file of all New York State bibliographic records. According to *Libraries & Technology*:

> For purposes of library automation planning, the Statewide database is defined as the aggregate of machine-readable records describing and locating materials in all physical data storage media and formats in New York institutions and support files. While issues of records ownership may affect database integration and linkage, the State goal is to facilitate global and inclusive access to the totality of such records.[2]

In addition, the linking of computer systems to communicate and exchange information among computer systems and system components (particularly the Linked Systems Project of the Library of Congress) is an essential component of the State's plan.

The potential size of the New York State database is impressive. The growth in the number of machine-readable bibliographic records in New York State has been dramatic, from 11 million records in 1980[3] to 13 million in 1984[4], and to 21 million in 1987 (32 percent of the estimated 65 million monographic holding records in the State).[5] For serials, the conversion statistics are also notable: of an 800,000-title serial database in the State, 72 percent or 1.1 million records were in machine-readable form in 1987, according to *Libraries & Technology*.[6]

These statistics, however imprecise, reveal a massive library database in the State. The extent of New York's machine-readable database was reflected in a recent OCLC interlibrary loan study which indicated that New York State's OCLC ILL subsystem users obtained 70 percent of all items requested of OCLC from libraries within the State. And OCLC is only one of the components of the New York State database.

DEVELOPMENT OF THE MACHINE-READABLE DATABASE

The need for access to cataloging records and location data is not new to libraries. In the 1960s and early 1970s, the increasing ability of computers to store, manipulate and display information enabled the library community to share bibliographic data and to experiment with ways of making this data available to users. The development of standards such as Machine-Readable Cataloging (MARC), International Standard Bibliographic Description (ISBD), and the Anglo-American Cataloging Rules (AACR) was critical to the success of centralized bibliographic systems and the improvement of overburdened and inefficient manual cataloging systems on the local level. As computer systems grew more sophisticated in the 1970s and information about library holdings became available through computerized networks, libraries experienced dramatic advances in access to materials and improved resource sharing.

We have become accustomed in the last few years to the enormous growth in the number of machine-readable records available on national, regional and local levels. While not "a religious experience," retrospective conversion has come to be viewed as a "good thing." The driving force behind retrospective conversion has been the interest of individual libraries in

online catalogs, circulation systems, serials lists and related library applications, but it has also come from statewide and regional efforts to build multi-institutional databases. In fact, the success of the New York State Regional Database Development Program is due, in part, to its support of an activity — retrospective conversion — which meets two sometimes conflicting needs: individual library development on one hand; and multilibrary cooperative programs on the other.

"...many librarians...view their collection as comprised... of materials owned by others."

In the past 20 years, the staggering quantity of materials from which libraries must select for local collections, decreased purchasing power and increased service goals have led many librarians to view their collection as comprised not only of materials owned by their individual library but also of materials owned by other institutions. Interlibrary loan, reciprocal borrowing privileges and commercial sources all contribute to the extended library. The growth of membership in automated library networks to over 6,000 libraries in North America alone, attests to the value librarians have placed on large computerized bibliographic files to improve access to library materials wherever located.[7]

COMPLEXITY AND COMPETITION

The growth of retrospective conversion activity, and the State and Federal funding which encouraged it, not only have provided unprecedented opportunities for expanded and efficient resource sharing and other cooperative projects, but have also created and been influenced by problems which must be considered in planning for future database development. The complexity of the database environment, including the Library of Congress, bibliographic utilities, regional networks, state-level conversion programs and local cooperative systems, is one factor. Another factor is increased use in recent years of commercial sources and individual local systems to provide some of the services the bibliographic utilities and statewide networks have been providing. In some cases, libraries have obtained services which focus on functional needs at attractive prices, but which may be detrimental to traditional cooperative ventures. The lack of a single national database and the lack of national planning and coordination in retrospective conversion has contributed to the decentralization of data files, duplication of records and inconsistency in standards application — in other words, to the current situation sometimes described as "database anarchy." The technological forces which in the early 1970s pushed the library community toward centralized bibliographic systems now are pulling toward decentralization.

However, many library planners believe that database anarchy is actually "advantageous diversity." The existence of multiple utilities and service centers has created new, competitive structures in areas of library service where competition was previously unknown. According to a New York State Library report, "this diversity has been generally advantageous because it has cost-effectively enlarged the base for resource sharing and has begun to meet changing needs of various library regions and their clientele."[8]

"...the user's interest in information has not yet received adequate attention."

In this complex and competitive database development arena an important element — the user's interest in information — has not yet received adequate attention. The focus of most database efforts to date has been on achieving bibliographic control over monographs and serials; there has been only limited conversion of materials in other formats. Subject access to online bibliographic records is not generally available. In addition, machine-readable databases of bibliographic and holdings information for serials have not been integrated with other important sources of electronic information, such as commercial information retrieval services, full-text databases and primary electronic literature. Database development has supplied new tools to old functions and has tended to perpetuate old distinctions between types of materials and information sources, rather than integrating all physical sources and electronic information sources and focusing on the user's interest in information regardless of format or source.

THE NUMBERS GAME

More prosaic issues to be considered in statewide database development are those involving numbers: how do library planners obtain meaningful statistics on database size and number of items converted, and, once a reliable count is available, at what point is further conversion of the State's holdings into machine-readable form unnecessary to meet the statewide

goals of access to materials and effective resource sharing?

Statistical assumptions about the massive New York State database are notoriously unreliable. The figures for the number of items in the New York State database and for the number of items converted which were mentioned earlier in this article were carefully quoted from *Libraries & Technology*, and the figures in *Libraries & Technology* are carefully phrased, using such terms as "approximately" and "reported as." Despite efforts by reference and research library systems to collect database statistics in New York State, inconsistencies and inaccuracies abound. Essential questions about what to measure and how to make and interpret the measurements are unanswered.

Partial solutions to the problem of database statistics include the clarification of exactly what figures are needed and the purpose for which they are needed; clearer definitions of terms such as "titles," "items," "volumes" and "records"; consistency from year to year in the type of data required; as well as financial support for the extensive task of recording, collecting and analyzing these figures. However, the most important questions may not involve the size of the database or the numbers of items converted, but rather the ability of library users to obtain needed materials and needed information quickly and the ability of libraries to supply the needed materials without any individual library carrying an unnecessary portion of the interlibrary loan burden.

"...at what point statewide emphasis and funding should shift to other aspects...such as delivery."

As retrospective conversion in New York State continues to accelerate, fueled by both individual library needs and State and Federal funding, it is important to consider at what point statewide emphasis and funding should shift from bibliographic database development to other aspects of resource sharing such as communication and delivery. A discussion draft of the 1986 recommended redesign of New York State interlibrary loan by Ralph M. Shoffner (Ringgold Management Systems, Inc.) included a proposal to improve access to library materials by diverting public funds from conversion projects to the purchase of microcomputers for electronic communication of ILL requests and to support of telecommunications costs for interlibrary loan.

There may be a point of diminishing returns in conversion of bibliographic records into machine-readable form; however, New York State is not yet at that point. Retrospective conversion in New York State has been uneven; some institutions and systems that have had access to a variety of funds have largely completed conversion of their collections while other institutions have done relatively little conversion. Therefore, to divert money from existing programs would seriously retard conversion activities and would substantially increase the interlibrary loan burden on those which have converted extensively.[9] A further problem is that some of the materials now listed as "converted" on the database include only a location for a library system or processing center rather than for a specific library which holds the item. More work is needed to provide holdings information for individual libraries and to improve access to this information in online and offline (such as CD-ROM) formats.

ECONOMIC ISSUES

Database development, access to library materials and economic consideration are closely related. New York State has led the nation in support of database development and creative use of national databases to meet state-level library needs. For New York State, with its extensive library resources and its increasingly successful legislative program, focus on a state-level database is, in economic terms, a viable and practical step toward improving access to library materials. On the national level, it has been more feasible politically to obtain Federal funds to build state databases rather than to build a single national database. The tendency of the Federal Government to favor funding of state efforts and of the New York State government to favor regional and local efforts have combined to make New York State and its regions the happy recipients of substantial funding for database development.

By 1988, the New York State Library Division of Library Development had provided $8.5 million in State and Federal grants to support database development on the State, regional and local levels. Since 1980, State and Federal funds have supported the development of a statewide machine-readable union list of serials in the OCLC database. The Regional Bibliographic Data Bases and Interlibrary Resources Sharing Program, established by the State Legislature in 1984, has provided a substantial boost to database development projects, promoted coordination of conversion efforts, improved access to converted materials and insured use of national and State standards. Yet it is important to remember that,

while State and Federal funding have provided an incentive to database development, most of the cost of conversion has been, and will continue to be, supported by local library funds.

A VISION OF THE FUTURE

The diversification of the database environment is not necessarily a negative development and does not inevitably lead to anarchy. The pattern of development for the next few years appears to be a mixture of centralized, distributed and linked databases. It is anticipated that:

> ...libraries will continue to use national (or regional) databases for cataloging data and ILL. Local automation projects for online catalogs, circulation, acquisitions, and serials control will be decentralized, and linking, using the OSI model, will probably be successfully achieved and applied in the near future.[10]

From this analysis it is possible to envision the continued development of a coordinated New York State database over the next five years, expansion of the online database to include all forms of materials and digital electronic information in all types of libraries, integration of local systems into larger databases and usage of the latest developments in telecommunications technology. In this vision of the future, the New York State database is at the center of the State's access program, its components linked through a successful national linked-systems project and additional State and regional linking mechanisms.

The State has taken the first steps in this direction with funding of regionally coordinated retrospective conversion projects which meet national and regional standards. Clarification is needed of statewide standards for institutions that use public funds for database development. These standards will help to ensure ongoing commitment of local funds for entry of current materials, maintenance and security of the database and access to the materials in the database.[11] Continued funding of database development, along with clearer requirements and commitments for libraries which receive State funds, increased emphasis on linking, telecommunications, document delivery and compensation of libraries for supplying resources are needed to achieve further progress toward the goal of coordinated and reliable access to library materials and information for all the State's citizens.

REFERENCES

1 Reed-Scott, Jutta, "Description and Summary of the RECON Report" in *Retrospective Conversion: Report of a Meeting Sponsored by the Council on Library Resources, July 16-18, 1984,* ed. Dorothy Gregor, Washington, D.C., Council on Library Resources, 1984. p. 3.

2 New York State, Statewide Automation Committee, *Libraries & Technology: A Strategic Plan for Use of Advanced Technology for Library Resource Sharing in New York State,* Albany, The University of the State of New York, The State Education Department, New York State Library, Division of Library Development, 1987.

3 New York State, New York State Library, *A Library Automation Plan for New York State, Discussion Draft, January 9, 1980.*

4 New York State, New York State Library, *A Library Automation Plan for New York State: 1984, Draft, August 1984.*

5 *Libraries & Technology.* p. 4.

6 *Op. cit.*

7 Martin, Susan, *Library Networks 1986-87: Libraries in Partnership,* White Plains, NY, Knowledge Industry Publications, Inc., 1986. p. 25.

8 *A Library Automation Plan for New York State: 1984, Draft.* p. 4.

9 SONAC Subcommittee on New York state Interlibrary Loan, *Report on Recommended Redesign,* by Ralph M. Shoffner, Draft, January 31, 1986.

10 Segal, Jo An S., "Networking and Decentralization" in *Annual Review of Information Science and Technology,* ed. Martha E. Williams, White Plains, NY, Knowledge Industry Publications, Inc., 1985. p. 222.

11 *Libraries & Technology.* p. 3.

LIBRARIES AND TELECOMMUNICATIONS NETWORKS IN NEW YORK STATE

By Frederick E. Smith, Associate in Library Services,
Division of Library Development,
New York State Library

Libraries & Technology, the Statewide Automation Plan issued in May 1987, makes 20 recommendations that set the direction for library automation in the State for the next three years. The second recommendation reads as follows:

> The Library Development Division, a Library Telecommunications Task Force, and other library leaders must participate in the development of a state-financed or state-assisted telecommunications network, assuming a leadership role, so the State's libraries can effectively participate in and take full advantage of such development.[1]

The explanation of this recommendation states, in part, that:

> State-financed, state-assisted telecommunications programs are vital to accomplish this plan. There are numerous players, many of whom do not yet recognize library interests in these developments.[2]

The objective of the first part of this paper is to profile the four existing educational networks in New York that provide statewide coverage and that, therefore, have the greatest potential to be the players that can accommodate library needs. These networks are Technology Network Ties (TNT), State University of New York Network (SUNYNET), New York State Education and Research Network (NYSERNET), and New York Network (NYNET). The second part of the paper will discuss the use of these networks for library applications.

THE NETWORKS

1. TECHNOLOGY NETWORK TIES

Technology Network Ties (TNT), which was established in the State Education Department (SED) by legislation in 1985, has as its primary goal the creation of a comprehensive, integrated data communications network for management and instructional computer services covering the entire State. It will achieve this goal by linking school districts, BOCES (Board of Cooperative Educational Services), and SED for the delivery of management and instructional computer services. When it is complete, TNT will: 1) replace and consolidate existing networks, many of which utilize redundant circuits for delivering management and instructional services to schools; and 2) establish new connections between educational agencies that will allow the delivery of a wide variety of new services.

"The TNT network will be established at three levels...."

The TNT network will be established at three levels: backbone, regional, and local. Between 1985-86 and 1987-88, the backbone was fully established among the eight BOCES Regional Information Centers (RICs), the New York City Central Board of Education, and SED. The backbone, which is a Wide Area Network (WAN), runs on IBM SNA (System Network Architecture) and operates at a speed of 19.2 kilobits per second (kbps). The regional level networks, none of which have been established yet, will connect the RICs with the BOCES Computer Centers and component school districts that fall within their area of service, and they will also provide an interface to the backbone. The regional networks will be Metropolitan Area Networks (MAN) and will use X.25 packet switching technology. The local level networks will consist, in the short term, of whatever hardware and software presently exists or is planned over the next few years in the various school districts. In the longer term, the plan is to develop local area networks (LAN) to connect buildings within a district and offices within a building. The various local area networks will be connected to the regional networks, which, in turn, will be connected to the backbone.

As already noted, backbone and regional networks operate with different protocols. SNA, which operates at the backbone level, is IBM's proprietary network protocol, whereas X.25, the regional level protocol, is a CCITT (Comité Consultatif Internationale de Télégraphique et Téléphonique) standard, which constitutes the lower three levels of the ISO/OSI (Interna-

tional Standards Organization/Open Systems Interconnection) reference model. However, these two protocols should be able to coexist and even provide a high level of information delivery through the use of gateways and even through the use of OSI products on SNA inasmuch as they have become available since about February 1987.

2. STATE UNIVERSITY OF NEW YORK NETWORK

The State University of New York Network (SUNYNET) is a strategic initiative to plan, develop, and implement integrated data, voice, and image communications among SUNY institutions for information resource sharing for administrative and academic applications. Stated otherwise, SUNYNET is a major part of the evolution of SUNY's disparate communication efforts into one full-function network.

The plan is to implement the network by 1990. It is currently operating in test mode, but should become a pilot project in spring/summer 1988. The pilot will connect the four University Centers (Albany, Binghamton, Buffalo and Stony Brook), the SUNY Brooklyn Health Science Center, SUNY Utica/Rome, and Central Administration in Albany. The plan is to expand to institutions beyond the SUNY System starting in April 1989. Once non-SUNY institutions are a part of the network, it will become known as the Shared Information Resources Education Network (SIREN).

The first evolution of the network operated at transmission speeds up to 56 kbps. The second evolution increased the speed to T-1, or 1.544 megabits per second. SUNYNET runs on TCP/IP (Transmission Control Protocol/Internet Protocol), although it plans to migrate to ISO/OSI when that protocol becomes fully available at all seven layers sometime in the next decade.

3. NEW YORK STATE EDUCATION AND RESEARCH NETWORK

The New York State Education and Research Network (NYSERNET) was created to link the university, corporate, and national laboratory, scientific and engineering community throughout New York State via a high-speed data communications network. This network also serves as a regional subnet of the National Science Foundation Network (NSFNET).

NYSERNET began in July 1985 with a grant from NSF to Cornell University to fund the network supercomputer center. Implementation began in January 1987 with six participants. The network is operating in a trial mode until January 1989. It is expected that eventually there will be about 100 participants.

Unlike the other three networks discussed in this paper, NYSERNET has no parent organization so it is dependent upon several sources for funding. In addition to NSF, which is the primary funding source, the sources are: New York State Urban Development Corporation; New York State Science and Technology Foundation; IBM; Kodak; and fees from the participating institutions. Other sources of funding may become available in the future. In-kind contributions in the form of free use of telephone facilities are being provided by New York Telephone, Rochester Telephone, NYNEX, Rochester Communications Inc. and Rotelcom.

The NYSERNET backbone initially operated at 56 kbps but it now operates at T-1. The 56 kbps capability from the backbone to participants has been maintained, however. Currently, 56 kbps is the lowest speed to which NYSERNET can connect although the intent is to link to speeds as low as 9,600 bps. In due time, NYSERNET expects to use higher bandwidth T-3 and T-4 networks. NYSERNET supports TCP/IP. However, the network is prepared to change over to ISO/OSI as soon as it becomes fully operational.

4. NEW YORK NETWORK

New York Network (NYNET) serves the nine public television stations in the State. NYNET, like SUNYNET, is a part of the State University of New York.

NYNET's services have just been upgraded with the establishment of nine satellite uplinks, one for each station. This new capacity is called the State University of New York Satellite System (SUNYSAT). SUNYSAT was designed to be a flexible and cost-effective broadcast transmission system to help improve access to educational opportunities throughout the State.

SUNYSAT will not transmit data for the foreseeable future. If and when the network begins to provide this service, it would provide a bypass technology that could be an option to the use of phone lines for data transmission.

LIBRARY APPLICATIONS

Libraries need to have access to cost-effective telecommunications networks in order to transmit data for a variety of purposes. At this time, only three of the four networks — TNT, SUNYNET, and NYSERNET — transmit data. Although the process of evaluating the role that each may play is still underway, all three networks have a clear interest in serving libraries. The potential for adding libraries to the network is included in the TNT legislation. SUNYNET has an organizational commitment to serve the telecommunications needs of libraries in the SUNY System and a strong interest in extending the net-

work to other libraries through SIREN. And NYSERNET is sufficiently interested in extending network services to libraries that it has established an Information Resources Committee comprised of a mix of library and computer center personnel.

Now that the TNT backbone has been fully installed, the next step is to begin to add the regional networks. The initial regional network will be in the area of the Madison-Oneida BOCES in Verona, New York. As a part of this step, there is considerable interest in developing a gateway with the Mid-York Library System in Utica, because the areas covered by this public library system and the BOCES partially overlap. Although the installation of this regional network is well behind schedule, it has considerable potential for the Mid-York Library System once it becomes available.

"The proposed network would provide improved and expanded online communications...."

The configuration that has been recommended would permit Mid-York's DRA (Data Research Associates) integrated library system to be connected to the proposed network node in the Whitesboro School District. If implemented, this configuration would provide several benefits. It would replace the current Mid-York telecommunications arrangement in which there are multiple communications lines. It would be possible to extend the integrated system to include certain member libraries that are not presently on the system because the communications cost to include them is now too high. Any library on the network would be able to connect with the System or any other library on the network for the price of a local phone call. The proposed network would provide improved and expanded online communications between school libraries in the Madison-Oneida School Library System and public libraries in the Mid-York Library System. And it appears that the network would be of financial benefit to Mid-York.

"TNT may, however, present two problems for libraries."

What has just been described for the Mid-York Library System could also apply to other library systems elsewhere in the State once other regional networks have been implemented. Not only would these various systems be able to take advantage of their regional network, but they could also connect with one another through the backbone.

TNT may, however, present two problems for libraries. First, the primary charge to this network is to provide a link among the public schools of the State, and it does not appear that it will be widely available for library purposes for perhaps three years. Second, the Governor's budget for 1988-89 may require that participation in TNT be placed on a matching funds basis, and it is not clear what the impact will be if this materializes.

The primary goal of SUNYNET is to connect the 64 SUNY campus libraries, but the network would also like to extend to other libraries around the State. As a step toward expanding its services beyond the SUNY libraries, this network is interested in conducting a pilot project between The New York Public Library and the State Library. As a specific service, SUNYNET could transmit all OCLC traffic in the State on the network and transport it to Dublin, Ohio through a common New York node. SUNYNET could also provide an effective means for telefacsimile transmission among the libraries of the State.

"But like TNT, the prospects of SUNYNET are not entirely positive...."

But like TNT, the prospects of SUNYNET are not entirely positive because it also presents two problems. One of these problems applies specifically to libraries whereas the other is more general but very fundamental. The former is that SUNYNET supports the TCP/IP protocol. TCP/IP is perceived as being in conflict with the ISO/OSI protocol, which is the basis of the Linked Systems Project involving the Library of Congress, OCLC, RLIN, and WLN. As noted earlier, SUNYNET intends to migrate to ISO/OSI when it becomes fully available in all seven layers sometime in the next decade, but the Linked Systems Project does not find this delayed approach to be acceptable. In contrast with the outlook of the Linked Systems Project, SUNYNET does not think that TCP/IP should be an obstacle to libraries using the network until ISO/OSI becomes available because SUNYNET can support X.25 even though it is basically a TCP/IP network. The more general but fundamental problem facing this network is that the Governor's 1988-89

budget for SUNY does not include SUNYNET. This could be a major setback, and it remains to be seen whether SUNYNET will be able to evolve into the SIREN network and become a viable option for libraries throughout the State, at least within the aforementioned time frame.

"NYSERNET has also shown considerable interest in libraries in several ways."

NYSERNET has also shown considerable interest in libraries in several ways. First, a project to load at least one of the OCLC databases and all of the BRS databases on to NYSERNET is under negotiation. A positive development for this project is that a key element to making it work is already underway i.e., NYSERNET is developing a gateway between TCP/IP and ISO/OSI that will make it possible for library data to be used on this network. Second, NYSERNET, like SUNYNET, would like to link the databases of The New York Public Library and State Library in an experimental project. Third, the major universities in the State participate in NYSERNET; including the holdings of all of the libraries of these institutions on the network is a desirable objective.

However, NYSERNET, like both TNT and SUNYNET, also presents libraries with two problems: namely it supports TCP/IP and it could be more expensive than either of these networks. The negative point of view about TCP/IP within the library community, which was discussed under SUNYNET, applies also to NYSERNET. It is probably because of the conflict between TCP/IP and ISO/OSI that NYSERNET has encountered less interest for its services among libraries to date than it had perhaps anticipated. Libraries are also concerned about the cost of using NYSERNET. Operating at T-1 capacity with interest in expanding to T-3 or T-4, NYSERNET is geared to the transfer of very large quantities of data at very high speeds, so economies are derived only as more data is transmitted. Although it appears that the amount of library traffic on any of these networks would be very low relative to the capacity available, the negative impact that this would have on costs may be greater with NYSERNET than with the other two networks. Libraries alone do not have the amount of traffic required to make their use of NYSERNET come anywhere close to approaching cost effectiveness, although this situation could be alleviated by the network's intention to link to a speed as low as 9600 bps, which is much more compatible with library needs. Another factor that may cause a problem is that NYSERNET has no parent organization to help underwrite its expenses over the long run.

The potential for library applications on the remaining network, NYNET, can be dealt with briefly. Essentially, NYNET, and more specifically SUNYSAT, cannot presently transmit data, and there is a question as to whether this network will be expanded to include data transmission at a later stage of development. SUNYSAT can provide a valuable service for libraries in terms of teleconferencing, continuing education, and the like, but these are not primary activities for libraries. With perhaps little potential to provide for the transmission of bibliographic data, SUNYSAT may not play a major role for libraries in the foreseeable future.

CONCLUSION

It is somewhat difficult to profile the four statewide educational networks since there are different perspectives about the capabilities and potential of each. But to attempt to make projections about library applications that may be provided by these networks is an even greater challenge since the environment surrounding each one is fluid to one extent or another. Of the three networks that provide data transmission, it is possible that all could be of equal importance so that libraries may actually use each network at certain times depending upon circumstances, e.g., if a library on one network wants to connect with a library on another network. Or one network may be considered primary with the others addressing selective needs or providing redundancy in case of failure of the primary network.

"...establishment of these networks on a statewide basis is the easy part...."

The statewide backbone map of each of the networks is very similar, so, even though they use different protocols, it would not be too difficult to establish gateways among them since many of the nodes in all three are located within close proximity of one another. Although there may be questions about governance and shared management among these networks, it is fairly easy, from a technical point of view, to provide connections among them. In fact, it would even be technically possible for the three networks to share the same backbone.

It should be noted that, relatively speaking, the establishment of these networks on a statewide basis is the easy part of the telecommunications puzzle. What is more difficult is to solve the problems of costs at the local level and linkages among disparate library computer systems. Stated another way, it is not nearly as difficult to provide a network that makes it possible to transmit a library transaction (e.g., an interlibrary loan request) across the State as it is to solve the problem of local telephone costs at either end of the network or to complete the transaction if the computer system from which it was initiated is of a different type than the system to which it is being sent. But these are concerns that go beyond this discussion.

The situation that exists with and among TNT, SUNYNET, NYSERNET, and NYNET, and especially how they apply to libraries, will be sorted out in due time. One or more of these networks, in either its/their current form or some future form, should provide better and more cost-effective telecommunications services than presently exist for the libraries of New York State.

REFERENCES

1 New York State, Statewide Automation Committee, *Libraries & Technology: A Strategic Plan for the Use of Advanced Technologies for Library Resource Sharing in New York State*, Albany, The University of the State of New York, The State Education Department, New York State Library, Division of Library Development, 1987, p. 12.

2 *Ibid.*, p. 12.

TOWARD A LIBRARY TELECOMMUNICATIONS NETWORK IN NEW YORK STATE: A REPORT ON THE WORK OF THE STATE LIBRARY TELECOMMUNICATIONS TASK FORCE

By George E. J. Messmer, Associate in Library Services,
New York State Library, Division of Library Development

The telecommunications costs outlook for libraries in New York State is, to say the least, very bleak. The Doomsday forecasts of skyrocketing telecommunications cost in the early years of the AT&T divestiture are on target. Alternative technological developments continue to be long-term and offer no near-term solutions for existing or impending online library systems installations. Library community efforts to influence legislation to give preferential rates to libraries have yet to produce any tangible results. To exacerbate the problems facing libraries in planning cost-effective telecommunications is the reality that networking with online access to other libraries to improve resource sharing is a fact of life, not just a trend. This scenario is not unique to New York State, and the American Library Association is addressing the high telecommunications cost.

On a more positive note, the State of New York is providing leadership in high-tech telecommunications. A study, commissioned under the auspices of several agencies, will soon be issuing recommendations on what resources the State should commit to telecommunications. The Governor of New York, in a speech to the governors of the Northeastern states on April 8, 1986 on fiber optic telecommunications, described three telecommunications projects underway in New York State. They are: 1) the New York State Education and Research Network (NYSERNET), a high-capacity digital network that would connect the State's major public and private universities, research laboratories, and industrial corporations; 2) THE TELEPORT, a joint venture involving the Port Authority of New York and New Jersey, the City of New York, Merrill Lynch Telecommunications, and Western Union Communications System to create a unique fiber optic network, satellite facilities, and office park located in Staten Island; and 3) A conceptual fiber optic network using the State Thruway as a right-of-way. These are encouraging signs and create an atmosphere for positive planning by the library community in New York.

LIBRARIES & TECHNOLOGY: A STRATEGIC PLAN...

At the same time, the New York State Library's Division of Library Development, with the participation of the library community, is implementing an automation program that includes a component for telecommunications. The purpose of this article is to examine the work being done by the Telecommunications Task Force to implement one of the 20 recommendations included in the report *Libraries & Technology: A Strategic Plan for the Use of Advanced Technologies for Library Resource Sharing in New York State*. This report not only addresses the issues of telecommunications for libraries, it addresses the issues of building a statewide bibliographic database, linking those databases by disparate computer systems and improving the level of consulting services and continuing education in library automation statewide. *Libraries & Technology...* represents one of the most significant planning documents available to New York State's libraries. It provides guidance for planning automation on the local level, and it provides guidance to the New York State Library in carrying out its mission in administering its automation program. The plan includes 20 recommendations and 8 priorities for automation and provides the basis for the work of the Telecommunications Task Force.

Three components of the plan in *Libraries & Technology...* were used to develop the charge to the Task Force. The first component comes from the Introduction, which outlines a three-part automation program adopted by the Board of Regents in 1986, calling for "a statewide library network to link local and regional systems, to provide access to national networks, and to provide integrated services using the library database and communications network." (This statement establishes the rationale to plan and develop a statewide library network.) The second component comes from Assumption number 6, which states, "The proposed Library Telecommunications Task Force, in conjunction with State Library staff, will determine the best mechanism for assuring participation in statewide telecommunications development and encourage cooperative network development within the library community." (This statement establishes a framework for the charge of the Task Force.) The third and final component is Recommendation number 2, which states, "The Library Development Division, a Library Telecommunications Task Force, and other library leaders must participate in the development of a State-financed or State-assisted telecom-

munications network, assuming a leadership role, so the State's libraries can effectively participate in and take full advantage of such development." It is the Task Force's responsibility to forward to the Phase II committee, the strategy necessary to carry out this recommendation.

TELECOMMUNICATIONS TASK FORCE CHARGE

The Telecommunications Task Force, appointed in June 1987, was charged to:

- Identify and evaluate the feasibility of using existing and planned telecommunications facilities within the State for library networking purposes
- Bring library needs to the attention of people and agencies planning telecommunication facilities
- Provide information needed by libraries and library systems in the State to determine whether or not their existing or planned telecommunications capabilities can effectively utilize local, regional or State-level facilities
- Develop guidelines as appropriate

"...three issues...to be addressed before [developing] recommendations."

As of February 1988, the Task Force has met on four occasions and identified three issues that needed to be addressed before it could begin to develop recommendations. The first issue deals with the telecommunications infrastructure in New York State, and how the library community can capitalize on existing telecommunications networks. The second issue deals with increasing telecommunications cost at the local level and what alternatives are available to libraries and library systems. The third issue deals with sponsoring and supporting efforts to obtain State and Federal legislation that would make tariffs more favorable to libraries.

TELECOMMUNICATIONS INFRASTRUCTURE

The State's telecommunications infrastructure is extensive and complex. It uses almost every existing means of communications — telephone, cable, microwave, fiber optics, satellite and radio — to support State government agencies. There are over 60 agencies and among them, the Education Department, the Department of Labor, the Office of General Services, the Departments of Social Services and Transportation, and State University of New York have independent, statewide telecommunications networks that link their own offices and computer centers around the State. A subcommittee, comprised of members from State agencies represented on the task force, was established to investigate the feasibility of expanding their agencies' network capabilities to accommodate the library community. The subcommittee reported that the State University of New York's telecommunication network, SUNYNET, and the Education Department's Technology Network Ties network, TNT, have the potential to provide services to libraries. They also determined that there are geographic areas where redundancy or overlap exist in their respective networks. They have agreed to continue to work together outside of the Telecommunications Task Force to explore sharing each other's networks. This activity is a major accomplishment for the Task Force, because it now provides the library community with alternatives that did not exist before. The questions now are how can we move as quickly as possible to take advantage of these networks, and what are the political implications for cross-agency sharing of these networks? In addition, The New York Public Library's Library Information Online Network System (LIONS), a regional library telecommunications network, and NYSERNET have telecommunications capacities that offer the potential to contribute to statewide networking.

COSTS

A second issue identified by the Task Force was escalating cost and the impact of these costs on the library systems' abilities to expand online services to their member libraries. Closely related to this issue is whether or not there are alternatives that would allow systems to control escalating costs. Libraries developing integrated online systems have found that the cost of telecommunications is more than the cost of the computer hardware. To address this issue, a subcommittee was appointed to investigate alternatives to telephone lines. Radio-data transmission, under certain conditions, has been a cost-effective alternative to telephone lines for data transmission. The conditions include limited distances between locations, no more than 20 miles; no terrestrial obstructions; and clear line-of-sight transmission. The subcommittee, through the cooperation of the Office of General Services, has made arrangements with Granger Associates, Inc. and Teleprocessing Products, Inc. to provide the necessary equipment and installation services, at no charge to the State, for a library-based, radio-data communications project. The pilot

Most importantly, when widely implemented, we will be able to benefit from the sophistication of our local systems while keeping intact the national logical network that has been developing for the past 100 years.

project is intended to demonstrate that radio-data transmission can be used as a cost-effective replacement to telephone lines under prescribed situations. The pilot project will use the New York State Interlibrary Loan network (NYSILL) for the test and initially connect the Education Department's NYSILL computer with two NYSILL transmission sites.

TARIFF LEGISLATION

The third issue identified by the Task Force deals with the need to seek State and Federal legislation to make tariffs more favorable for libraries. The Task Force supports the efforts of the American Library Association in seeking changes in Federal legislation dealing with telecommunications and a recommendation reflecting that support is being developed.

"identification of the telecommunications needs...."

In addition to the discussions on the three issues, a great deal of the Task Force's work was in the area of identification of the telecommunications needs of the library community. To help develop a better understanding of these needs, the librarians on the Task Force prepared a background paper that described the automation activities of libraries in New York State and how those activities related to telecommunications. The Task Force intends to recommend to the Phase II Committee that a comprehensive study be undertaken to determine the telecommunications needs of libraries on a statewide basis. This study should be initiated and funded at the State level.

In addition to the foregoing, the following proposals are under discussion by the Task Force and may be submitted to the Phase II Committee as recommendations:

- Establish a formal working relationship between the existing educational networks in New York State.
- Appoint a telecommunications advisory group to assist the State Library.
- Provide additional telecommunications consultative support in Library Development.
- Continue efforts to pursue alternatives to local loop technologies.
- Continue and increase support to those agencies seeking to establish special tariffs for libraries and other educational institutions.

Although there are no quick and easy solutions to the complex telecommunications problems faced by the libraries of New York State, the work of the Telecommunications Task Force is a step in the right direction in two respects. First, the Task Force is recommending measures that can improve the situation in the short term. Second, it is identifying issues that must be addressed over a longer period of time and is providing general direction for dealing with them. In these ways, the Telecommunications Task Force is playing a role in the continuing effort to make improved telecommunications services available to the libraries of the State.

NEW YORK STATE LIBRARY
TELECOMMUNICATIONS TASK FORCE
1988

George Messmer (Chair), Associate in Library Services, Division of Library Development, New York State Library

Gregory Benson, Jr., Director, Center for Learning Technologies, New York State Education Department

Stephen Bolton, Consultant, North Country Library System, Watertown

Donald L. Dundon, Director of Telecommunications Automation, Administrative Information Systems, State University of New York, Albany

Frank Konczal, Electronic Communication Specialist, New York State Office of General Services, Albany

Sam Memberg, Manager of Information Systems, LIONS (Library Information Online System), The New York Public Library, New York City

Michael O'Connor, Director, Southern Adirondack Library System, Saratoga Springs

Rodney B. Perry, Associate Director for Management Services, Rochester Public Library

Marsha Ra, Director, University Library Automation Services, The City University of New York

Michael Radlick, Director, Division of Elementary, Secondary and Continuing Education Planning and Development, State Education Department

William Schrader, President, NYSERNET, Inc.

Frederick Smith, Associate in Library Services, Division of Library Development, New York State Library

William Snyder, Executive Director, New York Network

Jerome Yavarkovsky, Director, New York State Library

THE ROLE OF STANDARDS IN NETWORKING

By Sandra K. Paul, President,
SKP Associates

The Network Advisory Committee (NAC) to the Librarian of Congress (and the National Commission on Libraries and Information Science) pledged itself at its December 1985 meeting to reaching the goal of nationwide networking, defined as "a system which provides to users, on a timely basis, the information they need at a cost they can afford." In discussion and in a survey of NAC members, standards were seen as both a barrier to and a strategy for reaching that goal.

In attempting to establish the issues, problems and opportunities related to standardization, we will first define terms and the process of standardization, then review some questions relating to standards for networking and, finally, address the specific barriers and rewards standards offer to those who seek the nationwide goal.

TYPES OF STANDARDS

Although there are many types of standards in this nation (e.g., currency, electrical voltage), for this paper we shall define and refer only to standards that relate to librarianship, information science and publishing — specifically to those appropriate to networking.

The American Library Association (ALA) defines four types of standards in its *Standards Handbook*[1] as follows:

1. "*Service or performance standards*...define a level of excellence or adequacy in performance..." for people, collections, space, etc. An example provided is ALA's *Standards for College Libraries*.
2. "*Technical standards*...provide a measure of excellence or adequacy for a product or thing." An example is ANSI Z39.2, *American National Standard for Bibliographic Information Interchange*, which is the basis for the MAchine-Readable Cataloging (MARC) formats.
3. "*Procedural standards*...describe an acceptable or agreed-upon method of accomplishing a particular type of...task." An example is the *Anglo-American Cataloguing Rules*.
4. "*Educational standards*...describe requirements for acceptable...education programs." An example is the library school accreditation standards.

Elaborating on the ALA definition in his *Technical Standards*,[2] Walt Crawford notes that "technical standards are definitions or specifications; they communicate agreements on sharing techniques" — the basic requirement for networking.

In this paper we will concentrate on technical standards, since they have the greatest implications for the networking process. However, we note that the existence and acceptability of other types of standards can enhance or preclude the development or implementation of technical standards for networking.

STANDARDS AUTHORITIES

Technical standards for the United States are developed under the guidelines and coordination of the American National Standards Institute (ANSI). In 1939, ANSI's predecessor organization, the American Standards Association, authorized the formation of Committee Z39 to develop standards for library and information science and related publishing practices. An excellent history of this organization appears in James Wood's *The National Information Standards Organization (Z39)*[3] (NISO). Following procedures specified in ANSI Guidelines,[4] NISO technical standards are developed by volunteers from the information community and voted upon by the 58 NISO voting members.

International technical standards are developed under the guidelines and coordination of the International Organization for Standardization (ISO). ISO Technical Committee (TC) 46 is parallel in scope to NISO. ISO technical standards are either developed by volunteers in one or more countries or, more frequently, submitted by a country in which that standard already exists. ISO standards are voted upon by the countries which are voting members of ISO TC 46, following procedures specified in ISO's Guidelines. Most countries, including the United States, rely on a technically oriented advisory group to assist in the review and voting process. NISO performs this function for ANSI in relation to U.S. position on ISO TC 46 standards.

ARE STANDARDS VALID AND USEFUL?

There is a clearer, more easily understood national and international structure for the development of

technical standards and a greater proliferation of information about technical standards than exists for all of the other types of standards noted previously. This implies that these standards are developed through a better — or at least a more acceptable — method and are more widely used than are the other types of standards. The problem with this assumption, in a nation where all standardization is voluntary, is that the standards-developing organizations have little or no information about the acceptance and implementation of the majority of the standards for which they are responsible. It is only when a standard becomes widely used that its utility becomes known to the standards-developing organization and to the information community as a whole. Few individuals realize that MARC is based on ANSI Z39.2; few would turn to NISO, ANSI or ISO to better understand the basics of the International Standard Book Number (ISBN) or the International Standard Serial Number (ISSN), even though the titles of these ANSI and ISO standards include the words "international standard."

One criteria for the existence of ANSI and ISO standards is that they must be reviewed every five (5) years and their validity reaffirmed. In an ideal world, standards would also be judged by the degree of implementation. Standards that exist, but which are ignored by the user community, would be abandoned as readily as those found to be outdated. Using a standard should mean that one is following an approach, technique and/or procedure approved by group consensus and tested and found workable elsewhere. In the world of standards this is not necessarily true.

WHO DEVELOPS STANDARDS AND WHEN DO THEY DO IT?

Ideally, standards should be developed by those with the greatest expertise, the broadest knowledge, but without personal or organizational gain from the standard. Standards should be available at a time when they are needed, but not before all other possible alternatives had been explored and abandoned. In reality, technical information standards are developed by volunteers who spend time doing so either because they or their organization need the standard, or simply because they can spare the time and are interested in the area.

Debates have raged for some time within NISO and its predecessor organizations as to the best timing for the development of standards. In some countries, national experts set out a matrix of activities vs. standards and attempt to fill in the cells by developing standards where they are missing. In the United States — at least in the library, information science, and publishing communities — we have functioned according to the "bubble up" method. This method assumes that creative solutions will be found to meet individual and organizational needs for standards when those needs arise. Proposed methods will emerge and be tested. Concepts which are poor will fail; those that are good will succeed. When the wheat is sufficiently separated from the chaff, the successful solution will become a standard. In the past, we may have been able to wait for this process to evolve; in times of rapid technological growth, we tend to have less confidence in the timeliness of standards developed under the existing scenario.

STANDARDS AS A BARRIER TO NETWORKING

Standards can be a barrier to networking by existing in only one system. Those unique standards developed and perpetuated by individuals or local systems, which are unknown to organizations with which they attempt to network, become barriers. In fact, unless it is predetermined that an organization will *never* participate in networking at some time in its future, the utilization of such unique standards virtually assures that it will not be able to do so. We see examples of this type of barrier when we find that low-cost, automated systems may accept a national standard (e.g., full MARC) record, but do not store it as such nor are they capable of outputting a comparable record.

Often it is the lack of knowledge of existing national and international standards that leads individuals or institutions to develop their own standards or to accept systems with such unique, incompatible standards. Information about ALA standards is available from the office in Chicago. Information about ANSI and ISO standards is available from the ANSI office in New York City, but with some difficulty because their clerical help is hired to fill orders for a wide variety of standards and does not have technical knowledge of the content of the products they sell. In the past six years of existence under its current management structure, NISO has attempted to make known to those in libraries, information science, publishing and related fields, that they should turn to NISO for information about information standards. NISO insisted that Cataloging in Publication data be included in the Z39 standards ANSI publishes; they asked for and received exhibit space at professional meetings; they attempted to make standards known to library school administrators; and they regularly issue press releases about their activities. NISO offers speakers on standardization for professional and educational meetings and is considering other

methods to raise awareness of both the standardization process and the specific ANSI standards it has developed.

"...astute international professionals...are developing conflicting approaches...."

Another type of barrier exists if national standards are in conflict with those approved or used internationally. For many years U.S. technical superiority virtually assured that the international information community would accept and use ANSI standards. That is no longer the case. ANSI standards proposed for ISO approval often are extensively modified by technologically astute international professionals who are developing conflicting approaches within their own country.

The lack of standards is also cited as a barrier to networking. As previously described, in the past the greatest stimulus to technical standards development has been individuals or organizations acknowledging that a standard is needed. This can be seen from the development of standardized interlibrary loan forms by ALA, through the development of computer protocols for linking systems by NISO and the development of UNIMARC by UNESCO. However, once the need for a standard is identified, the period of time it takes for volunteers to reach the necessary compromises between the local standards and/or their perspectives of future implementation of the standard is always longer than expected. This is followed by another long period of time during which the organizational members of NISO comment and vote on the standard. Finally, those who actually can use the standard are provided with the information necessary to implement it. This process can delay networking and frustrate many once-enthusiastic participants in standards development.

STANDARDS AS AN ENCOURAGEMENT TO NETWORKING

To the extent that everything we do is done by one person or for one organization, we really do not need standards. It is only when two or more individuals or organizations are responsible for contributing to the same effort that standards are required to assure that the results of the effort are comparable and usable by the others. Thus, in networking we see the ultimate requirement for standards, inasmuch as networking demands communication among and between individuals from a diverse set of organizations, and, when considering networking in a technological age, the requirement for standards is even more rigorous. If verbal or written information does not follow a standard, the receiving person or organization can call for and receive sufficient explanation to complete a transaction. If the same condition obtains in an electronic environment, the transaction is aborted.

The development and the implementation of technical standards provide organizations with the necessary tools for participation in networking. Such standards include such examples as: reference to a standardized form of an author's name that allows one to identify the specific edition of the book that is sought; standard interlibrary loan format in which one can inquire about the availability of an item in another institution's collection; and the standards that provide one electronic system with the ability to accept search criteria from another and move electronic bibliographic records about that book or full text from the book into the inquiring system. These standards provide us with the capability of networking — i.e., sharing information about the nation's information resources as well as sharing those resources themselves.

CONCLUSION

The barriers represented by standards do not seem to be inherent in the standards themselves. Instead, they are primarily the results of low-dollar commitment to standards development in the information community, which results in delays in the standards development process and participation by only those in that community who can afford to do so. This is compounded by the lack of awareness of existing standards, which often results in the development of conflicting standards or practices.

Those standards that do exist are known to be important to the goal established by NAC. The question facing NAC is how to remove the existing barriers created by the current state of the standardization process and insure that the appropriate standards will be available and usable on a timely basis.

REFERENCES

1 Committee on Standards, American Library Association, *Standards Handbook,* Chicago, American Library Association, 1983.

2 Crawford, Walt, *Technical Standards: An Introduction for Librarians,* White Plains, N.Y., Knowledge Industry Publications, 1986. p. 6. Available from G. K. Hall, Boston.

3 Woods, James L., "The National Information Standards Organization (Z39)" in *Encyclopedia of Library and Information Science,* v. 39 (Supplement 4), New York, Basel, Marcel Dekker, 1985.

4 *American National Standards Institute Procedures for the Development and Coordination of American National Standards,* New York, ANSI, 1982.

SELECTED BIBLIOGRAPHY

"National Information Standards Organization (Z39)," promotional brochure available from NISO, National Bureau of Standards, Administration 101, Library E-106, Gaithersburg, MD 20899.

Rush, James E., Ed., "Technical Standards for Library and Information Science," *Library Trends,* v. 31, no. 2, entire issue, Fall 1982.

"Z39 American National Standards for Information Science," ANSI, 1430 Broadway, New York, NY 10018.

OPEN SYSTEMS INTERCONNECTION, THE LINKED SYSTEMS PROJECT AND LINKING LIBRARIES IN NEW YORK STATE

By Ray Denenberg, Senior Network Specialist,
Network Development and MARC Standards Processing,
Library of Congress

The New York State Library developed a plan in 1987 outlining strategic direction for library automation development in New York State.[1] The plan addresses the ongoing development of a statewide database of cataloging, authority, holdings and other types of bibliographic records. The intent is to provide statewide access to the database. The plan further establishes several task forces and committees, including a Linkage Standards Task Force to recommend networking standards. These standards are to be based on Open Systems Interconnection (OSI) protocols and are to be consistent with the protocols of the Linked Systems Project Standard Network Interconnection (LSP/SNI).

OSI PROTOCOLS

The Open Systems Interconnection Reference Model of the International Organization for Standardization (ISO) is an International Standard[2] which provides a framework for development of standard protocols for computer-to-computer communication. The OSI model employs the concept of "layering," which serves to facilitate the development, description, and understanding of computer protocols. The various communication functions are partitioned into a hierarchy of layers: similar functions are placed in the same layer, and if one function is a prerequisite for a second function, the first function is in a lower layer than the second. The OSI model defines seven layers, and distinct protocols are developed individually for each layer. These "OSI Protocols" are developed by accredited standards bodies (for example, ISO and CCITT — Comité Consultatif Internationale de Télégraphique et Téléphonique) in accordance with the OSI model.

The seven layers of the OSI model are: (1) physical; (2) data link; (3) network; (4) transport; (5) session; (6) presentation; and (7) application. The lower six layers address generic communication services: data transmission, dialogue control, and data representation. Protocols for these layers are standardized by ISO. This article focuses on layer seven, the application layer, which provides direct support to the end application.

Different applications employ different application layer protocols. In general, application protocols are developed by individual communities of interest, such as the banking industry and the library community. For example, the standards body in the U.S. responsible for OSI application protocols for the library community is the National Information Standards Organization, NISO (Z39).

WHY OSI?

OSI is specified as the architecture for the New York State Library networking model for various reasons, based on economics, interoperability between systems and between system components, and compatibility with national efforts such as LSP. The Linkage Standards Task Force has emphasized the value of adherence to applicable international standards to allow a wider range of vendors, to avoid being bound to a single vendor to maintain compatibility with existing systems. OSI pertains to networking as well as distributed processing. It will eventually enable information exchange not only *between* libraries; it will allow *individual* libraries to distribute their processing, if they choose to do so, to select different equipment for different functions. The task force also stressed the importance of communication with nonlibrary systems (e.g. campus-wide networks) which serve the community in which libraries are located.

In the coming few years there will be several factors determining how soon operational networks will be able to migrate to OSI, and when OSI will become a viable choice for developing networks. This article is not a general discussion of the arguments pertaining to the use of OSI, since most of these issues have already been well-developed elsewhere. However, one aspect which perhaps has not received due attention is OSI application layer protocols. A major catalyst for OSI migration will be the various application protocols which have been or are being developed for use in an OSI environment. This article focuses on applications in an OSI environment, and in particular, how the LSP Authorities application might help model library networking applications in New York State.

AUTHORITIES APPLICATION

The New York State requirement for maintenance of and access to a statewide database invites comparison to the LSP Authorities application: the establishment and maintenance of a global database of name authority records, replicated at each of the participants' systems. The three current LSP participants are OCLC, the Research Libraries Group, and the Library of Congress.

When the project is fully implemented, libraries throughout the U.S. will input authority records to either OCLC or RLG, and the records will be transferred to LC via LSP. Currently, approximately 10 libraries contribute records, and an additional 25 libraries will be added over the next two years. Contributed records are transferred, after validation, from LC to the other two LSP participants. The LC database is designated as the masterfile, and the other participants' databases are copies.

When a library inputs an authority record to its utility for addition to the masterfile, the record is inserted into a "contribution queue." The LC computer initiates an LSP connection to the utility's computer on a regular basis (currently, every four hours during the day) to check the contribution queue and pull the records. Each record received at LC undergoes LC validation, and if accepted, is inserted into the masterfile, and also into the "distribution queue" at LC. Each utility initiates an LSP connection to LC on a regular basis to pull the records from the distribution queue. Records received at a utility via distribution are then put in the utility's database.

The process by which LSP participants contribute authority records to LC is called *Record Contribution*, and the process by which LC distributes the records to the other participants is called *Record Distribution*. Both processes use the application protocol *Record Transfer*, developed to transfer a batch of records (of any type) from one system to another.

A secondary requirement of the Authorities application is intersystem searching of authority records, used primarily for maintenance functions, such as quality control. Intersystem searching uses a second application protocol, *Information Retrieval*.

For a more detailed description of the Authorities application, see "Linked Systems Project, Part 1: Authorities Implementation" by Sally H. McCallum.[3] For general information about the Linked Systems Project, see *The Linked Systems Project: A Networking Tool for Libraries*, published by OCLC in 1988.[4]

THE LSP APPROACH TO INTERSYSTEM SEARCHING

Although current LSP requirements for intersystem searching are limited, the Information Retrieval protocol has been developed under the assumption that searching will be an important function of future intersystem applications. There are two distinguishing characteristics to LSP searching. First, computer-to-computer communication is employed, and second, intersystem syntax is used.

Consider a *local* search scenario. A user at a terminal requests the local system (the computer to which the terminal is connected) to identify books written by a particular author and to respond with a count of the items identified. The system responds that 15 items have been identified. The user then requests that the first four items be displayed, then the next four, and so on.

Next consider an intersystem search; assume that the same interactions occur between the user and the *local* system, but that the database is on a *remote* system. The local system translates commands to an intersystem syntax and transmits them to the remote computer, which translates from the intersystem syntax to its own syntax, and then accesses its database. The results are translated to an intersystem format, then transmitted back to the local computer, translated to display format, and to the user's terminal.

In effect, the user has a direct connection to the remote system. Of course the user could instead dial the remote system directly, but then the query would have to be formulated according to the conventions of that system; in fact, a different terminal might be required. By using intersystem communication together with an intersystem syntax, the burden of resolving differences between systems is placed on the computer rather than the user.

Note the distinction between intersystem communication and intersystem syntax. Intersystem (i.e. computer-to-computer) communication is contrasted to terminal-to-computer communication. Intersystem syntax, used during intersystem communication, is contrasted to passthrough access in which native syntax is transmitted without conversion to an intersystem syntax.

The intersystem syntax used by LSP is part of the Information Retrieval protocol, which specifies a well-defined set of protocol messages: Search, Search Response, Present, and Present Response. These messages enable an application on one system to request that an application on a remote system (1) search a database and identify records which meet specified criteria, and subsequently, (2) retrieve the identified records.

It is the use of intersystem syntax which distinguishes LSP from other proposed modes of intersystem searching. However, it is worthwhile to note several advantages of intersystem (as opposed to

terminal-to-computer) communication for searching, regardless of whether intersystem syntax is used. The local computer can screen local users before allowing access to the remote system, thus adding an additional layer of security and control. There might be a potential for telecommunication cost savings, by virtue of economies of scale. If the local system is intelligent enough, it might, in some cases, recognize that *it* can satisfy a request for information, and avoid a (possibly costly) intersystem search. And possibly the most important advantage of computer communication for intersystem searching is that by transferring the records intersystem, rather than from computer to remote-terminal, the user has access to the records in machine readable form.

NEW YORK STATE APPLICATION VERSUS AUTHORITIES

The two application protocols, Record Transfer and Information Retrieval are intended for use by applications which might differ significantly from the Authorities application. There are indeed differences as well as similarities between the Authorities application and the proposed New York State application of building and accessing a statewide database. For Authorities, the objective is maintaining the database(s); searching is employed to support that effort. For the New York application, access is the end objective; building and maintaining the database(s) are support functions.

Both the Authorities and New York applications involve a global database. LSP has chosen a replication model among several alternatives; New York might build a distributed or a centralized database, replicated databases, or perhaps use a hybrid approach. In any case, some mechanism will be required to build and maintain the database(s), which must be able to transfer records across systems. The LSP Record Transfer protocol would certainly be a candidate.

The Authorities application concerns authority records; the New York State database will be composed of various types of records. While the use of Record Transfer and Information Retrieval in LSP is currently implemented for the transfer and searching of authority records, both protocols were developed with the intention that they could be used with any type of records.

APPLICATION PROTOCOLS IN AN OSI ENVIRONMENT

The Information Retrieval and Record Transfer protocols are two of several OSI application layer protocols which are either now used, or are being considered for use in LSP or related library networking projects. Some are being developed specifically for library applications, for example, the Interlibrary Loan (ILL) protocol developed by the National Library of Canada, to support interlibrary loan in a distributed environment. Others, developed entirely outside of the library community, are being studied for potential support of library applications. Most notable in this category are the *File Transfer, Access, and Management* (FTAM) protocol developed by ISO and the CCITT X.400 series of standards developed to support messaging applications such as electronic mail.

There is an important attribute that these application protocols share: all are developed explicitly to operate in an OSI environment — that is, in conjunction with applicable OSI protocols. The lower OSI layers (in particular, layers five and six) support requirements imposed by application protocols, which in turn are developed to exploit the capabilities provided by these lower layer protocols.

During establishment of an intersystem session, the applications on two communicating systems agree to certain rules governing their dialogue. This agreement, as well as the enforcement of these rules during the session, is accomplished by the protocols of OSI layers five and six, the session and presentation layers. This relieves the application protocol from responsibility for carrying out these functions and allows developers to concentrate on the responsibility of the application protocol, specifying the information content, or semantics, of data transmitted between applications. Equally important, the resulting application protocol is more readable, because it is uncluttered by specification of lower layer functions.

"...application protocols developed in the future will be OSI application layer protocols."

For example, the Information Retrieval protocol specifies what action a system should take upon receiving a Search protocol message, and how to interpret the contents of the various fields included within the message — in other words, the protocol specifies the semantics of the Search message. The protocol does not, however, precisely specify how to convey the fact that a Search message is being transmitted, or how to distinguish one field from another within the message. The layer six (presentation) protocol takes care of that. As another example, the FTAM protocol assumes that recovery will be provided in the event of network failure, so that a file trans-

fer can be resumed at (or close to) the point of interruption, when the network is recovered. It is the session layer protocol which actually carries out the recovery.

Most, or perhaps even all application protocols developed in the future will be OSI application layer protocols. Existing OSI application protocols such as Information Retrieval, FTAM, and ILL are well-developed and rich in functionality. For these reasons, implementation of OSI application protocols has generated significant interest, even among those who are perhaps somewhat skeptical about OSI in general. In fact, it has been argued that OSI layering permits OSI application layer protocols to operate correctly over non-OSI protocol suites (for example, TCP/IP). In a narrow sense, this is true. Application protocols specify selectable functional capabilities; for example, the recovery feature of FTAM is optional. Recovery is not possible without the OSI session layer protocol. An implementor could build an FTAM product which does not invoke recovery, but this would seem to defeat the design of the protocol.

OSI STANDARDS AND PRODUCTS

NISO Standard ANSI Z39.50, an enhanced version of the LSP Information Retrieval protocol, is now an American National Standard. The ILL protocol is being considered for standardization, both in Canada and in the U.S. It is anticipated that there will be operational implementations of the ANSI Z39.50 and ILL protocols in the near future.

Both the FTAM protocol developed by ISO and the X.400 series developed by CCITT are established international standards. Commercial products for both are beginning to emerge.

Whether the LSP Record Transfer protocol is to be the subject of formal standardization is not decided. There are, however, several operational implementations of the Record Transfer protocol including one commercial implementation (Geac).

International standards exist for OSI protocols for layers one through six. In fact, for the lower five layers, international standards have been established for several years. The OSI protocol for layer six is a recently approved international standard.

For layers one through three, the protocols employed depend upon the type of network being used. For a packet-switched network such as Telenet, CCITT Recommendation X.25 specifies the lower three protocol layers. Commercially available products implementing X.25 are obtainable for most computers.

At layers four and five (transport and session), some manufacturers have announced products, including DEC, Tandem, and IBM. Others have disclosed details of future products, projected to be available within a year. At layer six (presentation), commercial products probably will not be available for one or two years.

FUTURE PROSPECTS

There is reason to be encouraged about the prospects of OSI product availability in the not-too-distant future. There have been various collaborative efforts during the past several years aimed at accelerating the development of commercially available OSI products. These efforts include the National Bureau of Standards' OSI workshops, the Corporation for Open Systems (COS), and the U.S. Government's OSI Profile (GOSIP).

The OSI workshops and demonstrations which began in 1984 have been supported by nearly every major computer manufacturer. They have been the vehicle for unprecedented cooperation between these companies, to help ensure compatibility among their networking products. The workshops have led directly to the development of OSI profiles, including General Motor's Manufacturing Automation Protocols (MAP), Boeing's Technical and Office Protocols (TOP), and the U.S. Government's OSI Profile (GOSIP). An OSI profile designates concrete choices for a specific class of OSI implementations (for example, for manufacturing or office automation) where these choices are left open in the actual standards. The LSP/SNI protocols are intended as an OSI profile for library applications.

"The U.S. Government [will issue GOSIP as a Standard] requiring government agencies to implement OSI protocols...."

The U.S. Government, which represents a major market for communications products, will soon issue GOSIP as a Federal Information Processing Standard requiring government agencies to implement OSI protocols within two years, unless they can explicitly justify not doing so. This should provide a strong incentive for manufacturers to hasten development of OSI products. In addition, the GOSIP advanced requirements committee, represented by several Federal agencies (including the Library of Congress), is working to resolve technical barriers to OSI migration for operational networks such as those of the Department of Defense.

COS, formed in 1985, is a coalition of over 60 indus-

try suppliers and users, whose primary purpose is to provide certification testing for OSI products. COS plans to provide a "seal" which certifies that a product will interoperate with any other product bearing the COS seal. It is hoped that COS will soon begin to produce meaningful testing facilities.

In June 1988, a major demonstration and exposition will occur in Baltimore. The Enterprise Networking Event, sponsored jointly by the MAP/TOP Users Group and COS, is expected to produce announcements of major OSI offerings.

The LSP participants are hopeful that these efforts as well as the events of the coming months, along with the continuing development of application protocols will provide the momentum necessary to bring OSI to maturity.

REFERENCES

1 New York State, Statewide Automation Committee, *Libraries & Technology: A Strategic Plan for the Use of Advanced Technologies for Library Resource Sharing in New York State,* Albany, The University of the State of New York, The State Education Department, New York State Library, Division of Library Development, 1987.

2 International Standard ISO 7498. *Information Processing Systems — Open Systems Interconnection — Basic Reference Model.* First edition 1984-10-15. Ref. No ISO 7498-1985(E), New York, American National Standards Institute, 1984. 40 pp.

3 McCallum, Sally H, "Linked Systems Project, Part 1: Authorities Implementation," in *Library Hi-Tech,* Issue 10, 1985.

4 *The Linked Systems Project: A Networking Tool for Libraries.* OCLC Library, Information, and Computer Science Series. Includes 13 papers describing the concepts, progress, and protocols of LSP. Several were presented at the LSP preconference Institute in San Francisco, June 1987. Published by OCLC, 1988. 140 pages. $13.50.

5 ANSI Z39.50-1988 *Information Retrieval Service Definition and Protocol Specification for Library Applications.* ISSN: 0276-0762.

LOCAL SYSTEMS IMPLEMENTATION OF THE OSI REFERENCE MODEL: THE NYU/RLG PROJECT

By Susan Kallenbach,
Technical Services Librarian,
Bobst Library, New York University,
New York, NY

When the new technology first appeared on the library scene, it was employed backstage, i.e., used in technical processing and circulation control. Like most other libraries, New York University started by using the MARC format via a bibliographic network — first OCLC and then the Research Libraries Information Network (RLIN). We used the technology to create orders, claims and cancellations, catalog cards, and fiscal reports. As others did at the time, we moved to automated circulation control soon. We then added a system that could handle administrative and office management functions.

But at this stage, the visible impact of automation at the user end of the system was negligible. This situation persisted until we added an online catalog, BobCat, in 1983.

One of the most striking results of BobCat was the remarkably high degree of user satisfaction it achieved; another was how early this occurred. BobCat became immensely popular with our patrons in spite of some serious shortcomings.

BobCat's initial database consisted only of recently acquired materials. Since then, we have kept up with new acquisitions and have been working industriously at retrospective conversion. This has been under way now for more than three years, and it will be at least another two years before the last of our manual records are converted to machine-readable form.

During the retrospective conversion era, BobCat has been learning new tricks. It will start telling users whether or not the material they are seeking is available: if it is on the shelves, on loan or on reserve.

"how little most users expect from [a system]."

To our surprise, though, we found that our patrons were already delighted with BobCat before it had any bells and whistles and before we had even begun retrospective conversion. I believe the lesson in this is that user satisfaction is not a result of how much a system provides but rather of how little most users expect from it.

This lesson has profound implications for all of us. It means that patrons will not necessarily be pushing us to provide them with more sophisticated technological access to information. It also means that we cannot depend upon "user demand" to justify or defend increasing our technological capacities or investment.

This situation heightens our professional obligations enormously. We must be able to recognize what our patrons cannot. We must be able to see and to seize the opportunities today's and even tomorrow's technology provides. We also must be able to bring these benefits to our patrons not because they ask for them, but because they are there, and because this is the job we do.

Changing technology does not change the library's mission — to collect, protect, and preserve information. The librarian's fundamental mandate remains what it has always been — to make information readily available to those who seek it — connecting people to resources. What changing technology has done is to make our job more difficult and expensive and require of us something new in the way of initiative.

"What develops at the user end of our new information systems cannot be anything more than what we librarians conceive...."

The challenge of technology also requires vision. What develops at the user end of our new information systems cannot be anything more than what we librarians conceive although it may well be less.

There are few limits to what we may offer users, save those we create ourselves, for what we install at the user end of our information systems will be determined by the nature of the systems we develop, and these systems, to be operating effectively should be able to be linked to networks beyond the individual library or institution.

It is important for us to recognize that while today's technology does indeed make possible a new magnitude of cooperation, resource-sharing, and informa-

tion delivery, it does not make them inevitable.

What technology most clearly offers is choice. It can be employed equally for private profit as for public benefit. It permits both more effective sharing of resources and more efficient hoarding of resources. While it is capable of expanding interaction, it can as readily encourage information isolation.

The barriers to information exchange, problems of linkage, and incompatible hardware, software and format were significant aspects of the new technology when libraries first began to adopt it. Neither the information industry nor the first academic users had been much concerned with information sharing. This priority surfaced only when a critical mass of libraries finally began automating.

Information exchange was nothing new to us. Librarians had been developing an infrastructure for cooperation and resource sharing ever since the turn of the century when the Library of Congress first exchanged catalog cards with other research libraries. We established national and international standards to communicate bibliographic information, and we were exchanging data through the National Union Catalog long before we entered the world of electronic processing.

It is hardly surprising that library automation essentially dates from development of the MARC format followed by the growth of bibliographic utilities, OCLC, RLIN and the Western Library Network. These developments produced a level of information-sharing that would have been unimaginable a decade earlier. It allowed us to take our first steps into automated technical processing and to pursue later, more ambitious programs of collection development, preservation and interlibrary loan.

"As our systems grew, the vision of something even better emerged."

As our systems grew, the vision of something even better emerged. We imagined creating nothing less than a national network that would eventually link all the various library systems throughout the country.

The chief obstacle to the realization of our dream was technological incompatibility. No surprise there, for technological incompatibility pretty much always emerges as a major villain when a new technology is being rapidly exploited. Standards are necessary if we are to realize the full potential of information technology at the end of the 20th century. This realization prompted a 12-year effort initiated by the Library of Congress to overcome the technical incompatibility of the large bibliographic utilities.

The result of this effort, the Linked Systems Project, has as its goal a standard and economical means of computer-to-computer communications that ties together the Library of Congress, the Western Library Network, OCLC and RLIN.

The Linked System Project (LSP) employs the informational equivalent of the standard gauge — the ISO/OSI protocols — that make it possible to connect different computers used by various networks. In fact, the protocols not only make internetwork connection possible, but they also will permit direct linkage between local systems and networks, allowing information to flow both ways. This means that ultimately the users of local online catalogs could be able to reach — directly and transparently — both bibliographic utilities and other libraries as well.

"...evolving technology offers choices as well as answers."

We must remember that evolving technology offers choices as well as answers. And access to all the major bibliographic utilities will be available only if we all undertake the necessary technical development to participate.

Moreover, while technology can make our dream of a nationwide linked-system network possible, it can also make possible alternatives to that dream. As local library systems are upgraded — adding online catalogs, increasing their capacity and acquiring higher levels of sophistication — they become capable of independent technical processing. They can now do for themselves what previously could be done only though bibliographic utilities like OCLC and RLIN.

The cost benefit of local processing is considerable, but so is the threat that local processing poses to our vision of a nationwide network. This network includes a vital role for the utilities as both central sources for bibliographic information and conduits for resource sharing. And the ability of OCLC or RLIN to perform these functions depends upon the ongoing input of information from local systems. This is information they automatically receive when they are involved in technical processing and information they can be denied by systems capable of technical processing on their own.

The continued flow of this information — from

libraries to utilities — is vital to the evolution of a nationwide network and the use of LSP protocols is essential to this process.

Indeed, LSP and the OSI protocols are the key if libraries are to realize fully the technological potential for information exchange and resource sharing.

But if libraries drag their heels, if we are unprepared to participate in the Linked Systems Project, if we are reluctant to invest in the development of software that will allow local systems to use the OSI protocols, it is entirely possible that much of the impetus will be lost. As a result, resources that should become readily available to us will remain accessible only with great difficulty or at great cost.

"We need to make firm demands on vendors and utilities."

We need to make firm demands on vendors and utilities. This is our professional obligation. We need to invest present resources to insure future benefits.

This, in a nutshell, is the thinking that went on at NYU as we approached the PEW Foundation for a grant to develop application level software to implement the ISO/OSI as used in the Linked System Project protocols. We proposed that a demonstration of the exchange of bibliographic records between RLIN and NYU's Geac 9000 system be undertaken.

BobCat was stabilized, record loading was a routine procedure, both RLG and Geac, our vendors, were interested in such a development project, and it appeared to be an ideal time to go forward.

During the early stages of the project, NYU library staff involvement was minimal. Most of the work was done by Geac and RLG staff. We became more active when the software was ready to be installed and tested.

Although the list of procedures followed, in principle, those established between LC and RLG as part of the Linked Systems Project, there were at least two important differences:

1. We were working with bibliographic, not authority, records.
2. The records we planned to exchange had RLIN local data fields as well as standard MARC fields. It took close to 7 weeks to work out the problems and bugs of the 10-day test. Decisions as to what RLIN local data had to be retained locally were made. How would we handle local systems ID numbers — 001-035 fields?

We decided to retain all data since those records might well make more than one transcontinental trip.

These decisions are now implemented, and we are finally ready to begin using the software in a production mode — importing records from RLIN into our Geac system on a daily basis.

In our next step, if everyone's schedule can handle it, during the first quarter of 1988, we will test the traffic in the other direction, from NYU to RLIN. Simply stated, this requires that Geac map the data elements in reverse.

Intersystem Search and Information Retrieval, the final stage, must still be developed. Specifications need to be written, software developed, and finally, the testing period will occur. As may be imagined, this is a far more complex application given the fact that indexing in dissimilar systems is not standardized. What one system includes in an author or title search is not identical with that in another system. But this is the stage we must work towards, starting out simply with LCCN, ISBN and other easily definable indexes.

This is when our patrons will once again be the direct beneficiaries of our technological developments — using the search language of these local systems. Patrons will be able to search not only BobCat but RLIN and, hopefully in the not too distant future, other utilities, libraries and even vendor databases.

Although we are well aware of the many economic and political issues that must be resolved, we believe that they may loom larger while the technological capability is unavailable. Therefore, we have opted to help resolve that problem first, hoping that the other issues may then be easier to focus on.

For the near future, we plan to continue cataloging on RLIN and loading our records daily into BobCat. When we can manage two-way traffic, we will do original cataloging on the Geac Bibliographic Processing System and send those records to RLIN daily. And finally, when information retrieval is in place, we will move all of our processing to Geac BPS but keep both databases synchronized through the exchange of records within a 24 hour time period.

What's in it for us and for other libraries?

1. Our database will be more current than has been possible — maybe too current. We may have to wait for books to get to the shelves or even delay loading records into the online catalog.
2. In terms of cost, we will be able to consolidate equipment. Rather than have multiple types of terminals for different uses, one terminal can serve multiple purposes. Maintenance and replacement of equipment will be simplified. Overall equipment and maintenance costs should be reduced. Telecommunications costs will be reduced, or at least contained.

THE LINKED SYSTEMS PROJECT*

By Teresa Strozik, Head,
Technical Services, Hamilton College,
Clinton, NY

My charge today is to talk about the Linked Systems Project (LSP) from the point of view of network organizations, emphasizing OCLC and exploring practical implications for librarians.

I would like to start by defining a network, then review what has been accomplished by LSP to date, review plans for the future and finally explore what all this might mean for the librarian in the field.

A network is a *formalized* structure to *facilitate exchange* of *information* and *services* and to promote *development* and *transfer* of *new services* in the library field. The word "network" in the library field carries the connotation of *cooperating membership, resource sharing, linkage* and *use of new technologies.*

While this definition fits both organizations like RLIN, OCLC, WLN and regional or state organizations like SUNY/OCLC, NELINET, PALINET and AMIGOS or reference and research library systems, for purposes of clarity I will refer to the former as bibliographic utilities and the latter as networks. Actually the utilities, especially LC, view their role as a partnership in LSP. (The Linked Systems Project is a joint venture of Washington Library Network [WLN], The Research Libraries Group [RLG], Library of Congress [LC] and OCLC, with the Council on Library Resources [CLR] providing financial support.)

It might be useful also for purposes of subsequent discussion of implications for librarians to remind ourselves why libraries join networks. There are three main reasons:

1. To obtain services or products which a library cannot effectively or efficiently obtain by itself
2. To satisfy a need which it can't afford to satisfy by itself
3. To provide a future with more potential

LSP ACCOMPLISHMENTS

The LSP project implemented so far is the Name Authorities Cooperative (NACO) authorities application, in which libraries *contribute* to the building of a master authority file residing at LC; in turn, the records are *distributed* to LSP participants. OCLC and RLIN can access LC records from a single queue at LC at different times. RLG has pulled over a million authority records from LC over a two-year period; OCLC pulled around 200,000 authority records over a six-month period in 1987.

Record transfer is accomplished within 24 hours. A response file notifies system partners that records were passed from one system to another. Forty NACO participants have contributed over 240,000 name authority records to LC.

Before the NACO project used LSP, the NACO office reviewed authority record work on paper workforms submitted by members and then forwarded them to LC for keying in. OCLC formerly submitted about 250 change requests each month to LC; it took LC six months to process them. LSP allows direct input and avoids keying at LC. The project advances quickly, avoiding time delays and allowing timely quality control of name authority records. Thus the LSP project has successfully met the NACO objectives, namely:

- to produce a nationwide authority file of LC quality records
- to share the cost burden of the most expensive form of cataloging
- to reduce the duplication of effort among institutions
- CLC's technical evaluation of the Linked Systems protocols in OCLC's implementation of the name authority distribution application also reports success.

Before reporting on the evaluation it might be useful to explain some acronyms. For instance, what is SNI? It stands for Standard Network Interconnection. SNI is LSP's implementation of communications protocols that are based on the International Standards Organization (ISO) Open Systems Interconnection (OSI) reference model. The protocols cover computer-to-computer communication.

SNI was developed using the OSI Reference Model and applicable standards where they existed. Where standards did not yet exist in final form, LSP attempted to make SNI as close as possible to what was thought to be the final form of the evolving standards.

It is the intent of the LSP Policy Committee to

*From a presentation to SMART at the New York Library Association Annual Conference, October 1987, when the author represented SUNY/OCLC.

change SNI into strict compliance with OSI standards where this is required. Thus OCLC reports:

- The computer-to-computer link has been achieved
- The national/international standards are achieved in spirit. LSP is *not* currently OSI compliant, but the LSP/TC (Technical Committee) is spearheading migration to OSI standards
- The file is generally updated within 24 hours
- Data security (while not explicitly provided for by LSP protocols) is included in the OCLC system within bounds of LSP protocol

Another achievement is the establishment at LC of a test facility. LC offers this test facility for commercial products to test SNI conformance of system implementation. LC plans to provide certification for vendors wishing to bring their products into conformance with protocols. OCLC and RLG have used this facility.

"There are accomplishments on the local...front also."

There are accomplishments on the local systems vendors' front also. New York University has implemented a link between RLIN and Geac. NOTIS reports work on a similar capability at Northwestern to be operational in 1988. DRA, DEC and Carlyle are reportedly also moving towards implementation. It is reported that the Irving Library Network in Colorado has linked its CLSI system with a Sperry Univac using LSP-based protocols. LS/2000 reports that it can build on work already done by OCLC in implementing the OSI thus saving on development time.

The Automation Vendor Interface Advisory Committee (AVIAC) consists of representatives from the various local library system vendor organizations created to address the concerns of that community with regard to interfacing of library automated systems. AVIAC has recommended that the present committee members representing vendors make a commitment to implement as soon as possible the SNI protocols being used in LSP. The focus of this group is the linking together of local library systems as well as linking these systems to the major utilities.

The Triangle Research Libraries Network (TRLN) is a library information network which consists of the University of North Carolina at Chapel Hill, Duke University and North Carolina State University. OCLC has had a long-standing relationship with TRLN. TRLN now wants to establish a host-to-host linkage with OCLC but will wait until the utilities migration to OSI is completed. TRLN believes an LSP link to a utility will be more efficient in operation and workflow than archive tapeloading, especially for large institutions with independent networking capabilities.

"Developments on the international level are encouraging."

Developments on the international level are encouraging. The French government has recently issued a regulation requiring that governmental funds be spent only on hardware and software that supports OSI.

The Deutsche Bundespost, the West German telephone company, now requires conformity to all completed OSI standards before it will allow data to be transmitted over its lines.

The European Economic Community countries have agreed to give preference to suppliers which support OSI standards in public sector contracts. This agreement is binding on the governments as of February 1, 1988.

In the United States, the National Information Standards Organization (NISO) has made the linking of systems using the OSI Standards its highest priority. Perhaps most encouraging of all, the Corporation for Open Systems (COS), a trade group that includes AT&T, Digital Equipment Corporation, IBM and 50 other computer and high technology companies, has made the OSI its highest priority and has already developed five packages that test for concurrence with OSI.

FUTURE PLANS

The Linked Systems Project Policy Committee agreed this year on several key issues which bring the group closer to its goal of creating a logical nationwide network through interconnection of systems. The resulting project priorities are:

1. Completing the work on authorities implementation (completed in July 1987)
2. Developing the capability to transfer bibliographic records among participants
3. Assuring that local system linkages to the four partners will be identical and LSP-based
4. Developing the capability to provide utility intersystem searching for shared cataloging

5. Developing the capability to handle messages and interlibrary loan transactions between utility systems

OCLC Inc., the Library of Congress and RLG have hopes of developing bibliographic record transfer and the ability to search each others' shared catalogs by the end of 1987. WLN has not yet announced anticipated completion dates. The LSP partners have also reached agreement on the protocols to be used in the transfer of records from their systems to local systems. They decided that LSP protocols will be used and that LSP protocols will migrate to full compatibility with ISO standards as those standards are completed.

LSP member utilities also agreed that they will make intersystem searching for shared cataloging available to their members participating in NACO and the National Coordinated Cataloging Program (NCCP) according to some agreed upon plan based on a utility's capacity to provide the service. If it is desired by any partner utility to extend the intersystem searching facility to additional institutions, supplementary agreements among the participating utilities would be made.

Another future application that grew out of the success of the NACO project is the National Coordinated Cataloging Program itself. The NCCP plans to use LSP to increase the volume of cataloging distribution to the library market by increasing outside cataloging contributions. The goal of NCCP is to develop a quality database of national cataloging records.

The objectives are to:

- increase timeliness of cataloging copy
- extend coverage of cataloging
- avoid duplication of effort
- produce national-level quality cataloging

Participants will supply descriptive cataloging and subject headings and classification following AACR2 and LC rule interpretations to LC, and LC will redistribute these records to the utilities using the LSP link.

The pilot project for NCCP will begin when full LSP is available for bibliographic record transfer. Currently the pilot is scheduled to start in 1988. The project will consist of eight members supported with two LC terminals each for direct cataloging input to LC. LC will then redistribute these records to the utilities using the LSP link. Pilot libraries are UCLA at Berkeley, Harvard, University of Illinois, University of Indiana, University of Michigan, University of Texas at Austin and Yale.

On the local system front, vendors warn that implementation of LSP will be expensive. There are as yet no standards available for item status and patron records. AVIAC has turned over its work on item data to NISO and is now working on patron data. NISO is beginning to work on Local System LSP standards SCLL exchange of circulation systems data.

Several local system vendors, when queried about OSI implementation, told me that this was not a priority requested by their current user groups, which seems to me to call for the quote, "we have met the enemy and it is us." If we, the library community, do not put pressure on our vendors, certainly no one else will.

Here in New York State, as part of the statewide automation plan, the New York State Library has appointed a Task Force on Linking Standards, whose charge is to:

- recommend standards and specifications necessary to ensure computer-system-to-computer-system exchange of information as proposed in recommendations 9 and 10 in the Statewide Automation Committee's document, *Libraries & Technology: A Strategic Plan For the Use of Advanced Technologies for Library Resource Sharing In New York State*;
- recommend a reference model representing a linking configuration to establish future compliance criteria;
- recommend a series of pilot projects demonstrating the feasibility of adherence to adopted standards;
- develop strategies to allow the State Library to participate; and
- benefit from national efforts such as the Linked Systems Project.

WHY IS OCLC INVOLVED IN THE LSP PROJECT?

There are many reasons for OCLC's involvement in LSP. LSP is viewed by the community of users OCLC serves as an effective mechanism for timely sharing of resources. As library automation vendors and other national/international bibliographic networks implement LSP-based links, current and prospective OCLC users may find OCLC less attractive if it cannot provide these linking capabilities. Further, there are movements afoot by some state and other funding sources to restrict funds for library automation to systems and/or services that have certified LSP capabilities. In addition, the ISO-OSI international standards on which LSP is based are required in many foreign countries.

From 1980 to 1984 (the early years of LSP activity), OCLC participated in LSP as an observer and participated in technical reviews. In 1984 OCLC announced plans to implement LSP and began the development

of the necessary software to link with the other systems.

"...develop a generic implementation that could be used to link with any vendor."

Now a full LSP partner, OCLC is committed to providing the capability to use the LSP protocols for information retrieval and record transfer to move records to and from local systems which choose to develop this kind of interface (as GEAC has done for NYU). The idea here is to develop a generic implementation that could be used to link with any vendor. RLG/RLIN and OCLC are working cooperatively on this development so that both will be providing the same kind of interface.

This kind of interface could take the place of a number of current ways of getting records into a local database for OCLC users. The current "black box" interfaces used to transfer records screen by screen could be replaced by the user taking an action (a command or menu choice) that would place the edited version of the record in a distribution queue to be transferred later in the day. A subscription to OCLC-MARC tape distribution could also be replaced by LSP record transfer.

Alternatively, if the user is working in the local system, records could be transferred by an information retrieval request to the utility, edited appropriately, and added to the local database. New records created in the local system could also be added to the database of the OLUC (Online Union Catalog). This possibility raises all sorts of legal, policy and support questions which will have to be resolved. But the LSP protocols provide the frame work for the transfer process.

- CLC is very much aware that not every OCLC library will wish to make use of an LSP-type record transfer mechanism but, rather, may wish to continue something similar to the current "screen dump through the black box" immediate transfer. Therefore, OCLC plans to provide for both mechanisms in the New Online System, probably in 1989-90.
- CLC's adoption of the OSI model is an important feature of its new online system. Concurrently, OCLC recognizes that many of its members in the university and research community now use DARPA TCP/IP protocol for their systems. (The DARPA/NSF internet includes ARPANET and the NSF regional and super computer networks such as NYSERNET.) While it seems likely that eventually the big national internets will be OSI-based, one does not accomplish such a move overnight. OSI will probably not come into wide use until 1990 or later.

Recognizing that TCP/IP will be with us for the next few years, OCLC has agreed in principle to link with it. A test of such a link — which is called TP4 (TR = Transport layer) and was developed at Wisconsin — is scheduled for 1988. It would essentially run OSI on top and TCP on the bottom. If successful, this link would provide access to the OCLC Online Union Catalog Reference Service to NYSERNET users sometime in 1988 and would, therefore, also allow access to other OCLC services.

- CLC also sees the LSP protocols being used as the mechanism for the transfer of records to and from other external sources such as LC and RLG/RLIN to expedite the kind of record transfer that is currently done by tape creation, shipment and tapeloading.
- CLC is a partner in the NCCP. OCLC wants to incorporate OCLC members' local headings into NACO workflow through LSP to provide OCLC users with authority records for locally established headings.

We have discussed uses of LSP protocols based on the use of established formats (MARC authorities format and bibliographic format). The Linked Systems Project plans to implement ILL Request Application or ILL Protocol Application and Full Text Transmission or Document Delivery. The expansion of LSP protocols to Interlibrary Loan cannot proceed without agreed upon standards for ILL requests. Work is underway within NISO on standard data elements and protocols. Initial reviews of this work reveal some problems in their application to a system as interactive as OCLC's ILL subsystem. This is because a lot of LSP is predicated on sending a packet of data (or a record) to an external site and reporting the success or failure to process that record, rather than modifying a record many times based on actions taken on something like an ILL request. I am happy to say the partners are working together in this area.

IMPLICATIONS OF LSP FOR NETWORK AGENCIES

A major consideration for the networks is the host-to-host communication between bibliographic utilities. Linkage among vendor local systems is also a concern because it provides for independent network-

ing among cooperating institutions.

A major concern involves the agreement between the utilities regarding ownership, copyright and use of bibliographic records. According to remarks made at the LSP Institute at ALA this year, the utilities accept in principle the idea of "equitable shares" of database content among users. Monitoring record transfers among systems will determine equity of shared use. If imbalances in record transfer from one system to another are determined, this might have to be addressed on a cost basis. Who will pay? Might we be in danger of perpetuating the "haves" and "have-nots"?

There are many unresolved issues surrounding how LSP-based records, services, etc., will be priced, although tentative agreements have been reached by the partners. It was agreed to exchange authority records freely without charge. It was also tentatively agreed that activities in support of the nation's authority file will not normally incur intersystem fees or charges except as a utility may levy charges on its own members to support its own functions. But it will not charge another utility's members for using LSP access.

The LSP project participants have tentatively agreed that no restriction will be imposed on redistribution of authorities records exchanged between the participants, including the distribution through the Library of Congress MARC Authorities Subscription Service. Once transferred to a participating utility as a result of an intersystem search, a bibliographic record must be regarded as contributed permanently to that utility, to be used in the same manner as other records which have been contributed through tapeloading or original cataloging. Certain records have been provided to LSP participants with constraints on future distribution and may not be available for LSP sharing. In addition, the Library of Congress may claim and transfer records from LSP sites for titles the Library has acquired for its own collection, or as a result of a coordinated cataloging program, and may make such records available as a MARC record through the MARC Distribution Service.

The LSP participants have agreed to provide system access to their approved NACO members for the purposes of using, creating, maintaining this access to the provision of intersystem searching by other LSP hosts' NACO members.

With regard to bibliographic data, each participating utility has tentatively agreed to make intersystem searching for shared cataloging available to those of its member libraries who participate in the Library of Congress Coordinated Cataloging Program (NCCP).

The utilities (RLIN, OCLC and WLN) view themselves as a partnership in LSP. Where do network organizations fit into this partnership? Does the partnership interfere with present network operations? If a network operates in a broker relationship with a utility, will products and services of that utility be affected by the partnership with other utilities? Will networks have to rethink their value-added service?

Another concern of some networks is the contribution of LSP to host-to-host linkages of utility databases with independent sites such as TRLN. An LSP Link directly to the utility may be more efficient in operation and workflow than archive tapeloading (which in some cases is a network value-added service generating network revenue). This is especially true for institutions with independent networking capabilities (such as TRLN) that already have implemented computer-to-computer links among different sites using the same automated local system.

ILL is a major enterprise crossing not only institutions but utilities and publishers. In the future, ILL may be affected by LSP. This could seriously reduce current revenue for utilities and networks. However, the LSP partnership among users of various utilities will increase the number of users accessing information about resources so that ILL activity may increase. But will utilities achieve a cost-effective balance between borrowers and lenders?

If the utilities begin sharing data and/or transactions, networks will have to reexamine their service offerings and revenue-generating strategies in the light of capabilities brought about by LSP.

Networks have a tremendous opportunity and challenge here. There is a need to educate users about standards and OSI. Only informed users can make good decisions and can pressure vendors and manufacturers to develop products for various machines implementing the OSI protocols.

The networks can play a role in indexing local online public access catalogs and in quality control.

Now that the initial protocols and applications have been installed, the issues facing utilities are largely financial. The Council on Library Resources has invested six years and $3 million to bring LSP into being. No one really knows the ongoing costs, but it is safe to say it isn't cheap. The cost components are software development, software maintenance, telecommunications overhead, an increase in traffic load on the system and cost of record use among different proprietary databases.

The utilities, according to Warren Haas, President of CLR, must now concern themselves with:

- Finance of enterprises that cross institutions
- Budgets for costs
- Copyright, ownership interests and publishers'

commitment involved in computer communications
- Prediction of how many libraries will participate.

Remembering that their aim is to provide access to information, libraries must face these issues:
- How many libraries want to share information?
- How many want to pay for information?
- How many want to pay and share for the *most* efficient and timely access?
- How many prefer less costly methods, or methods requiring the least reinvestment of resources?

LSP will offer us opportunities and challenges whether we are catalogers, public service librarians, systems librarians or library administrators.

"Catalogers will be the first affected by the LSP."

Catalogers will be the first affected by the LSP. Already with the NACO project and completion of the authorities phase, a cataloger has access to more authority records, more quickly. With implementation of NCCP, cataloging coverage, timeliness of copy and quality of copy will be significantly extended, further reducing duplication of cataloging effort and sharing the cost burden. If OCLC is successful in incorporating local headings in the NACO workflow this will be another added benefit. A coordinated shared cataloging program could not come at a more propitious time. It comes just at the time when university, college and other libraries are experiencing increased requests for foreign language materials as more researchers turn their attention to international affairs.

A shared cataloging program will help ameliorate a current and growing staffing problem. Libraries are finding it difficult to secure the services of librarians who possess specialized language skills and who are also knowledgeable in the application of the AACR2 cataloging rules.

A shared cataloging program will also help cap the costs of cataloging in an online environment. While cataloging copy in machine-readable form has produced enormous gains in cataloging productivity, it has also led to increased costs of original cataloging. This is partly due to the need to comply with national standards; but it is also true that a machine-readable cataloging record is more complex and time-consuming to create and key than was its manual counterpart.

A nationwide cooperative cataloging program should be viewed just as the name implies — as a nationwide program involving all libraries which have the resources and are willing to make the commitment to the high standards of bibliographic quality required. Mechanisms must be put into place to ensure that the work of participants is accepted with a minimum of redundant human checking and revision. Otherwise the full benefits of a coordinated effort will elude us.

There is concern, however, among some OCLC users about the structure and integrity of the OCLC database resulting from the expanding definition of a shared cataloging environment. The definition of a shared cataloging environment today is radically changed from the early days of OCLC. Tapeloading records and variations in cataloging rules and interpretations such as unique CONSER rules, LC interpretations and UK MARC cause problems for some because there is a fine line between what is required for the unique description of an item and what is expedient in a shared cataloging environment rapidly becoming international in scope.

Many catalogers are looking at the needs and requirements of both the large shared-cataloging environment and at the very specific needs of the local database environment. Is it possible to create cataloging practices that will address and answer both of these needs? Is that desirable? Is there a solution in the online environment that will not impede the work in the local environment? Should our energies be concentrated on creating standards whereby a newly created record would be acceptable to a wide range of needs within the library network as well as to other networks; LC as well as local systems?

What do we have to gain from such an effort? Lower costs, higher productivity, a richer database and better served users. A coordinated cataloging project at the national level deserves the support of all university, college and other librarians regardless of present network affiliation, or of one's specialization within technical services or public services.

Systems librarians who are planning a new system should consider including provision for compliance with OSI in the RFP and the contract. If they are now operating a local system, consideration should be given to the cost benefits of changing from black box or tapeload to an LSP link mode of record transfer; they must consider the economic impact on vendors of older systems, who will need to redesign to conform to OSI. They will need to consider how to link with TCP/IP systems in many cases.

Interlibrary loan librarians are now trying to figure out how to keep their heads above water as acquisitions costs rise and retrospective conversion increases the number of ILL transactions without a commensurate increase in ILL resources. They have to consider the cost benefits: full implementation of OSI will

allow use of the direct patron-linked environment or scholar's workstation, where a patron personally performs verification and location of documents. This reduces the need for staff intervention. The decisions made now in selecting lenders will be further complicated when options exist for full text transfer directly from publishers.

"Networking and internetworking are growing at a fast pace...."

It appears that near universal connectivity within higher education and research environments is surprisingly close. It seems likely that within five years almost any computer at a major university or research institution, and many linked to such a computer via a network, will be interlinked into a giant national network. Networking and internetworking are growing at a fast pace, and today's internets involve tens of thousands of hosts.

Librarians must keep informed about these developments and understand them. We must learn about standards, especially OSI and LSP, and encourage library vendors to comply with them.

It is encouraging to note that Data General, Tandem and DEC are now working on software packages which promise to save development and maintenance costs.

We must sharpen our skills at doing cost analysis. We must articulate exactly what we want a link to accomplish for us, justify why we need it, and then decide if we are willing to pay the price.

Networks should actively support LSP as a concept and should provide programs about it. We should recognize that LSP, when it comes into full being, will require the library community to make decisions about copyright, use of records and commitment to sharing information.

ACKNOWLEDGEMENTS

I would like to acknowledge wise words on this topic which my network and utility colleagues shared with me. My thanks to Lou Wetherbee of AMIGOS, Jeff Sowder from NELINET, Barbara Evans-Morkuson of INCOLSA, and Glenn Patten, Larry Learn, Jimmy Thomas and Paul Capuzello from OCLC.

INTEGRATED LIBRARY SYSTEMS IN NEW YORK STATE*

By William Saffady, Professor,
School of Information Science and Policy,
State University of New York at Albany

DEFINITIONS

Any discussion of integrated library systems must begin with a definition which establishes the scope of the product group. In the strictest sense, an integrated system utilizes a single bibliographic database to support a variety of library operations. The most complete implementations include application modules for cataloging, catalog access by public and staff, circulation control, acquisitions, and serials control, perhaps supplemented by materials booking, a community bulletin board system, electronic mail, and other capabilities. This article adopts an intentionally broader definition that encompasses any system which meets the following criteria:

1. It must be a commercially available product marketed as a prewritten software package designed for operation on customer-owned equipment. This requirement eliminates customized integrated systems developed for specific libraries of which there are several examples in New York State.
2. It must operate on a mainframe or minicomputer. Single workstation microcomputer systems are specifically excluded from this discussion, although several UNIX-based products implemented on multi-workstation microcomputer hardware are included.
3. It must be designed specifically and exclusively for library automation. Although they have been successfully adapted to library applications, broad-purpose database management products such as INMAGIC and MINISIS are excluded.
4. It must support, as a minimum, circulation control and database queries. While many systems include staff and public catalog access modules that permit retrieval by author, title, subject, and other parameters, the broad definition employed in this discussion encompasses systems that restrict users to more primitive retrieval parameters, such as author or exact title searches. Such systems are often implemented for circulation control, although they can support simple database queries as well. Some can be upgraded for more sophisticated catalog access.

While all four of these criteria are arguable, at least 27 systems marketed by 26 vendors meet them. They are CLSI, Geac, Notis, Dynix, OCLC Local Systems (for both the LS/2000 system and the LS/2 product line acquired from Dataphase), Virginia Tech (VTLA), Data Research Associates, Comstow (the Bibliotech System), Gaylord, Universal Library Systems (ULYSIS), Sobeco, Sigma Data/Cental (the Datalib System), Georgetown Medical Library, Carlyle, IBM (the DOBIS/LIBIS System), Inlex, Sirsi, Utlas, Information Dimensions/Battelle (the TECHLIB/STATS implementation of BASIS), McDonnell Douglas, Eyring Research Institute, HCE Automation, Sedna Corporation, Washington University, Innovative Interfaces (INNOPAC), and Unisys (which markets the PALS system developed by the Minnesota State Universities).

NEW YORK INSTALLATIONS

In June 1987 — when the broader study on which this article is based was prepared — an estimated 908 integrated systems were installed or contracted for installation in U.S. libraries. At that time, the Middle Atlantic region — defined, for purposes of this discussion, as New York, New Jersey, Pennsylvania, Delaware, Maryland, and the District of Columbia — accounted for over 20 percent of the national installed base of integrated systems and was considerably ahead of other geographic areas. With 68 installations (7.66 percent of the national total), New York ranked first in the Middle Atlantic region and second among all states in the number of integrated system installations. California ranked first with 104 installations representing 11.71 percent of the national total. Texas ranked third with 53 installations representing 5.97 percent of the national total. Taken together, libraries

---

* **Author's Note:** This article provides summary statistical information about integrated system installations in New York libraries, comparing them to nationwide installations. While the article contains some previously unpublished information about New York installations, its nationwide statistical data is derived from a study that was originally funded by and prepared for *Library Technology Reports*, a publication of the American Library Association. The complete study, entitled "Characteristics and Experiences of Integrated Library System Installations," appeared in the September/October 1987 issue of *Library Technology Reports*, v. 23, No. 5, pp. 651-768.

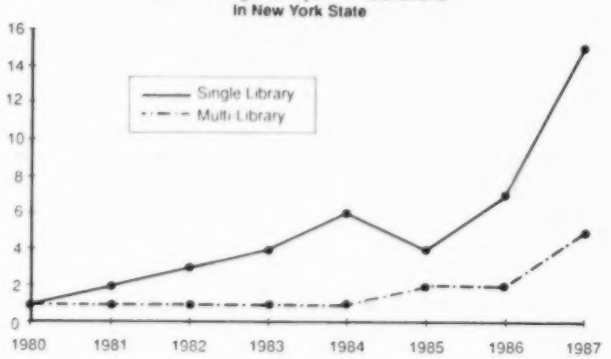
in California, New York and Texas accounted for more than 25 percent of all U.S. installations. New York itself had more installations than the total of the 19 states with the fewest installations. It is important to note that these installation statistics are limited to processor sites — that is, libraries (or their affiliated data processing centers) in which an integrated system's primary hardware components are actually installed. They do not indicate the number of libraries that utilize remote terminals to access integrated systems operated by other libraries.

As might be expected, the uneven geographic distribution of integrated system installations reflects regional and state-to-state variations in the number of libraries. Obviously, states like New York which have many libraries have the greatest potential for integrated system purchases. To compensate for such variations, each state's integrated system installations can be expressed as a percentage of the total libraries in that state. According to summary information presented in the fortieth edition of the *American Library Directory* (New York, Bowker, 1987), there are 25,224 public, academic, and special libraries in the United States, excluding individual public library branches and libraries with fewer than 500 volumes. Only 3.6 percent of them have installed integrated systems. The same source contains entries for 2,507 located in New York State. With 68 integrated system installations in 2.71 percent of its libraries, New York falls well below the national average and ranks thirty-second among all states, just below Alabama (2.74 percent) and just above Idaho (2.65 percent), in terms of percentage of libraries with integrated systems installed. By way of contrast, California ranks eighth with integrated systems installed in 5.7 percent of its 1,824 libraries, while Texas ranks thirteenth with integrated systems installed in 4.47 percent of its 1,187 libraries. Utah is the national leader with integrated systems installed in 15.6 percent of its 109 libraries.

SINGLE- VS. MULTI-LIBRARY INSTALLATIONS

Of the 68 integrated systems installed in New York State in June 1987, 49 (72 percent) served a single library and its associated branches. As discussed here, single-library installations also include multi-building and multi-site library systems operated by universities, corporations, institutions, and government agencies. The remaining 19 systems (28 percent) were multi-library consortium or cooperative installations. Nationwide, 82.4 percent of all integrated systems were in single-library installations in June 1987, and 17.6 percent served multi-library consortia. As Figure 1 indicates, New York's single-library integrated system installations are increasing at a faster rate and account for a progressively larger percentage of installations than multi-library sites. At the end of 1979, for example, multi-library sites accounted for five of the 11 integrated system installations (45.5 percent) in New York State. by the end of 1985, multi-library sites accounted for 12 of 38 installations (31.6 percent). In New York, as in the United States as a whole, the increase in single-library installations has probably been spurred by the availability of integrated systems designed specifically for small libraries which, in the 1970s and early 1980s, might have participated in multi-library installations.

Figure 1
Annual Integrated System Installations in New York State



INSTALLATIONS BY LIBRARY TYPE

Of the 68 integrated systems in New York State in June 1987, 30 installations (44.1 percent) were in academic libraries, 29 installations (42.6 percent) were in public libraries, and 9 installations (13.2 percent) were in special libraries (including medical school libraries). New York had no integrated system installations in school libraries. As summarized in Figure 2, 27 (55.1 percent) of New York's 49 single-library installations were in academic libraries, 16 (32.7 percent) were in public libraries, and 6 (12.2 percent) were in special libraries. In the United States as a whole, 42.24 percent of single-library integrated systems were installed in academic libraries in June 1987; 39.25 percent were installed in public libraries; 18.01 percent were installed in special libraries; and 0.50 percent were installed in school libraries. Among New York's multi-library integrated system installations, 68.4 percent are operated by regional library systems, consortia, or other organizations which primarily serve public libraries. No comparable nationwide statistics are available.

LIBRARY SIZE

In New York, large libraries with sizable budgets

and staff dominate integrated system installations. As Figure 3 indicates, almost 28 percent of integrated systems are installed in libraries with collection sizes larger than 1 million volumes, although such very large libraries account for just slightly more than 18 percent of installations nationwide. Over half of New York's integrated systems are installed in libraries with collection sizes larger than 400,000 volumes, while such libraries account for about 35 percent of installations nationwide. Nationally, over 25 percent of integrated system installations are in libraries with fewer than 100,000 volumes. In New York, such small libraries account for less than 14 percent of integrated system installations.

Figure 2
Percentage of Integrated System Installations by Library Type

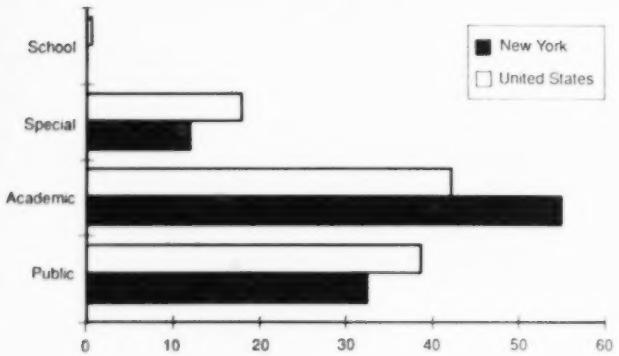


Figure 3
Percentage of Intergrated System Installations by Library Collection Size

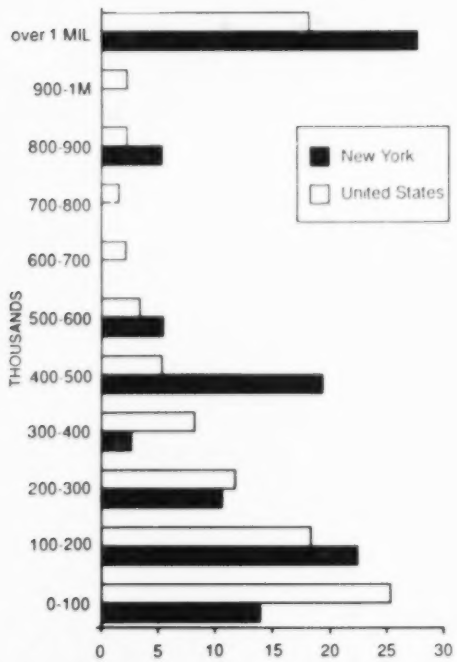
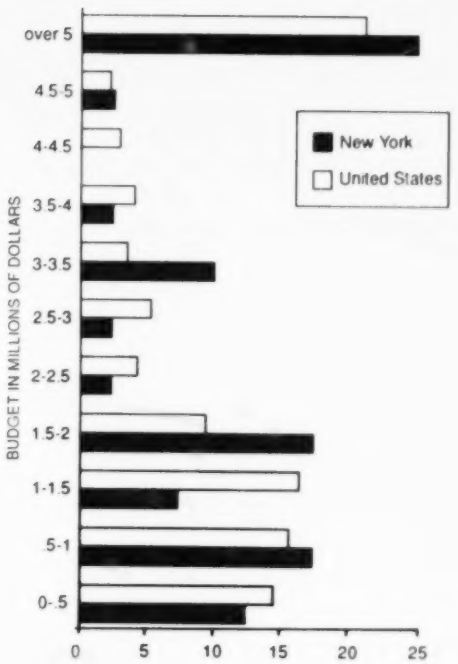


Figure 4
Percentage of Integrated System Installations by Library Budgets



As Figure 4 indicates, 25 percent of New York's integrated systems are installed in libraries with total budgets larger than $5 million and 40 percent have budgets larger than $3 million. Nationwide, such libraries account for about 35 percent of installations. Compared to the nation as a whole, Figure 5 indicates that New York State has a smaller percentage of installations in libraries with very small book budgets. Nationally, almost 12 percent of integrated systems are installed in libraries with annual book budgets smaller than $50,000 and almost 29 percent are in libraries with book budgets smaller than $100,000. In New York, libraries with annual book budgets smaller than $50,000 account for just 6 percent of integrated system installations, and those with book budgets smaller than $100,000 account for about 21 percent.

Figures 6 and 7 indicate that New York has a greater percentage of integrated system installations in libraries with fewer than 40 total employees and 25 professional employees.

VENDOR REPRESENTATION

As Table 1 indicates, the 68 integrated systems installed in New York in June 1987 represented 13 different product lines sold by 12 vendors. Among other states, only California (16) and Texas (14) have

more varied vendor representation. While this variety reflects the differing automation requirements of New York State libraries and the competitive procurement environment in which they operate, it poses problems, since the integrated systems of different vendors are typically incompatible with one another. For New York libraries, integrated system installations are an important component in an emerging technological infrastructure which makes an increasing amount of bibliographic data and local holdings information available in machine-readable form. Recognizing the complex issues raised by the proliferation of different library automation products, the New York State Library has established a linkage standards task force which is examining the potential for intersystem communication and is developing standards for such communication. Its work will have a significant impact on the selection, implementation, and interrelationship of integrated systems by New York libraries in the next decade and century.

Figure 5
Percentage of Integrated System Installations by Library Book Budgets

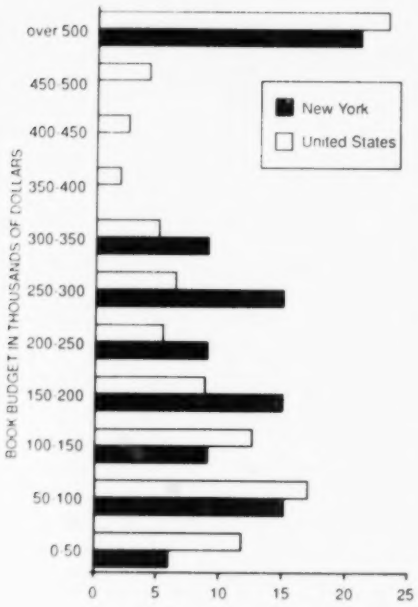


Figure 6
Percentage of Integrated System Installations by Library Staff Size

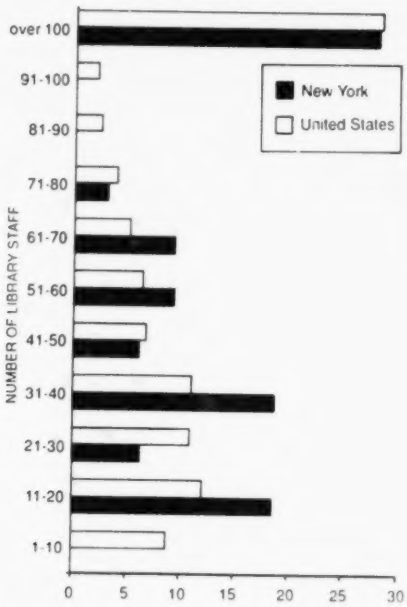


Figure 7
Percentage of Integrated System Installations by Professional Staff Size

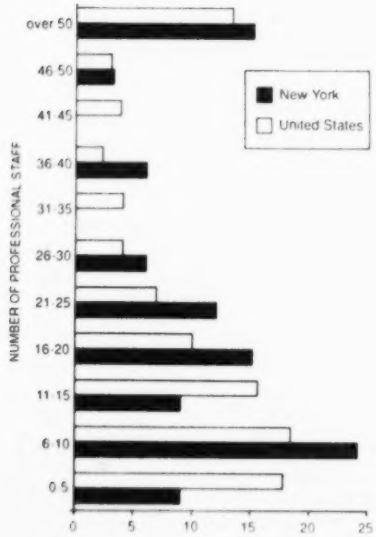


TABLE 1

New York State Integrated System Installations in June 1987

Vendor	Number of Installations
CLSI	17
Notis	6
DRA	6
OCLC LS/2000	8
Geac	8
Gaylord	8
Carlyle	7
OCLC LS/2	2
Georgetown Medical	2
IBM	1
VTLS	1
Dynix	1
Comstow	1

COMPUTER TECHNOLOGY FOR SERVICES FROM THE NEW YORK STATE LIBRARY

By Jerome Yavarkovsky, Director,
New York State Library

For more than 20 years, the New York State Library has been a leader among the nation's research libraries in the adoption of computer technology to enhance services and improve operations. As early as 1968, the State Library was using a computer system to control the thousands of periodicals and other serials it received. Since then, computers and telecommunications have altered virtually every aspect of library operations and services.

THE ONLINE CATALOG

An online catalog, installed in 1981, replaced 3 million cards in a manual catalog containing 2,000 drawers. The online catalog was designed jointly by staff of the Library and the Division of Electronic Data Processing (EDP) and operates on the Burroughs mainframe of the State Education Department. An interim catalog on microfiche was used between 1978 and 1981 when the Library moved to new quarters in the Cultural Education Center and decided not to move the card catalog. The microfiche catalog continues to be produced as backup for the online system.

Telecommunications makes the catalog accessible from any terminal or microcomputer dialing or connected to the State Education Department network. This includes 56 interlibrary loan transmission sites and dozens of Legislative offices and State agencies in addition to the many locations in the public service and technical processing areas of the Library.

Liberating the catalog from the tyranny of cards and cabinets has saved thousands of hours of filing and traveling between workplace and catalog for staff and patrons alike. Perhaps more important, it has provided a tool to search the collections by fast and powerful means hitherto unavailable. Subject and title word searches permit the user to find material beyond the possibilities of the card catalog.

INTERLIBRARY LOAN AND NYSILL

Interlibrary loan is a major responsibility of the State Library, which runs a statewide computer network to serve research needs. The New York State Interlibrary Loan (NYSILL) system is online daily for 56 public, private and academic libraries throughout the State to send interlibrary loan requests to the State Library on behalf of several thousand other libraries. The NYSILL transmission sites use microcomputers to communicate their requests to the State Education Department mainframe, which is queried several times a day by staff of the State Library to produce a list of pending requests. After searching for the requested items, Library staff send reports through the NYSILL computer network to the originating library, indicating whether the request has been filled.

A new capability in the NYSILL system in 1987 allows transmission sites to search the online catalog directly and to convert the resulting bibliographic data into an interlibrary loan request electronically. Because the bibliographic information for this "ExpressILL" service is taken directly from the State Library catalog, all the necessary data for filling the request is included. This saves considerable staff time, and, in three out of four cases, the material is located and shipped the same day.

CIRCULATION

Onsite circulation is managed by a computerized circulation system purchased from Burroughs and run on the Department mainframe. An optical character recognition light wand is used to record book and borrower data. The system gives instant information about a book's availability and provides a degree of control over collections previously not possible. It automatically produces overdue reminders and recall notices so that patrons in need of material already in circulation will get it more readily. The system also maintains borrower eligibility files more efficiently and automatically requests annual patron registration.

INVENTORY

Closely related to the online circulation system is an automated inventory system designed by staff of the Library and the Division of EDP and programmed by Burroughs. Portable terminals and printers are wheeled through the stacks to check the shelf order and circulation status of material. The Library's first complete inventory in nearly 40 years began in fall 1987. In addition to correcting shelving errors, the inventory discovers cataloging errors, uncataloged books, and missing items. Correcting these problems

and improving shelf maintenance helps patrons and circulation staff by eliminating the frustration and unnecessary work resulting from inaccurate records and misshelved material. The first automated inventory process was also used to place machine-readable labels on books in the stacks for the online circulation system and for future inventories.

ACQUISITIONS PROCESSING AND CATALOGING

Acquisitions processing and cataloging are both prepared through the Online Computer Library Center (OCLC) in Dublin, Ohio. Orders for monographs are prepared by searching the OCLC bibliographic database, finding a record that describes the book, electronically converting the record to an order, and transmitting the order to a book dealer. If no record is found, acquisitions staff create an order record online and transmit it through the system to the dealer. By this means, no paper files are created or maintained, saving considerable staff time.

A member of OCLC since 1972, the New York State Library has created more than a quarter of a million catalog records through this shared cataloging system. In addition to the records found or created in the OCLC system, the Library converted more than 650,000 catalog records to machine-readable form, producing an online catalog file in excess of 900,000 complete bibliographic records.

AUTHORITY CONTROL

Because the catalog is the cornerstone of access to the Library's 2-million-volume collection, its 4.5 million microforms and hundreds of thousands of government documents, the integrity and consistency of the catalog are vital to excellent service. Control over the indexing vocabulary of names and subjects used to search the catalog is maintained by sending tapes of new catalog records to the LIONS (Library Information Online Network System) processing center of The New York Public Library. There, all names and subjects are matched against the computerized authority file of The Research Libraries of The New York Public Library before they are entered into the State Library catalog.

The online catalog continues to grow as records are entered from U.S. Government Printing Office cataloging tapes representing material added to the collections through the Library's role as a regional Federal depository. In addition, brief bibliographic records are added to make accessible that Library material awaiting cataloging that is of lower priority than the current cataloging workflow. Finally, as a major Cooperative Online Serials Program (CONSER) member, the State Library adds thousands of serial records to the national database and to the online catalog.

SERIALS CONTROL

Serials and periodicals are now controlled online through the F.W. Faxon Company LINX system. This system is used to order new serials, check in issues received, and claim missing issues. In addition to online access to State Library holdings, LINX provides microfiche lists for use within and outside the Library for shared collection development and interlibrary loan.

DATABASE SERVICES

Database Services staff of the Reference Unit have access to over 400 online databases through such leading vendors as BRS, DIALOG, Mead Data Central, the National Library of Medicine, and Vu/Text. Covering a broad range of subjects, many are online equivalents of printed indexes and abstracts such as ERIC, *Index Medicus*, and *Dissertation Abstracts*. Others, like ABI/Inform and Robotics, are available only online. Database searches are a powerful means to identify publications in many fields of interest, and they produce logically organized bibliographies, often with abstracts. They can be used with periodical literature updates for current awareness.

The State Library is also beginning to make available databases on CD-ROM. These tools are available in the Library and are generally designed for easy patron use. They bring to Library users the masses of bibliographic and other data formerly accessible only with professional assistance and only through remote facilities.

This emergence of friendly computer systems is a critical milestone in the evolution of library computer systems. It will continue the transformation of State Library service that has begun with the computer systems now in use, even as those systems evolve to higher levels of service and efficiency.

IMPROVED SERVICES

The work of the Library has been dramatically changed by its computer systems. Levels and quality of service are delivered now that would have been impossible without these systems. Speed, accuracy, procedural rigor, remote access by patrons and other libraries to the holdings of the State Library, access by the State Library to the cataloging and indexing of other institutions, control over collections, time-saving tools, logically powerful systems to do research,

word processing software to facilitate reports and correspondence — all of these are elements of the revolution in improved processing and service enjoyed by the State Library over the past 20 years. More work, and better in many ways, is performed by the staff of the Library on behalf of patrons from government, business, education, and the press. On the whole, fewer staff members are providing a higher level of service.

"...more is possible...through the integration of systems...."

All of this has been possible only because of computer technology and telecommunications, and the systems to date have served well. However, more is possible, and we can see the mechanisms for achieving more through the integration of systems that now function independently.

A VISION OF THE FUTURE

Library processing and the research process consist of independent steps that build on previous steps in a procedure that reaches a logical end or enters a new series of steps in a new procedure. For example, material is ordered, received, cataloged, prepared for shelving, shelved, located in the catalog by a patron, circulated, returned, and reshelved. In another example, the researcher starts with an idea, searches catalogs and indexes to validate the uniqueness of the idea and to identify research related to the idea, locates the material needed to develop the idea, uses the material, and prepares a report.

Except in a few instances, the systems now in use are mounted on different computers and are accessible through different terminals using different protocols. Acquisitions and cataloging are performed through OCLC, operate on the same database, and are linked bibliographically so that the record used for ordering eventually becomes the catalog record. Staff are cross-trained and acquisitions staff have responsibility for catalog-related decisions. This arrangement is salutary and efficient.

The catalog is fundamental to access and service, and much Library processing is related in some way to the catalog. But the traditional departmentalization of processing and service in libraries, and the concomitant development of computer systems to support traditional processing have resulted in procedural arrangements that are now anomalous in an era of mass storage and telecommunications.

SYSTEM LINKAGES

When a search of the catalog is conducted, the result should include the circulation status of the material found. Currently, the online circulation system is independent of the online catalog. Both are resident in the same computer, but they are searched through different software systems using different terminals. A next step in the development process is to link the circulation system to the catalog so that the patron or reference staff helping a patron can locate material, determine whether it is available, and generate a request slip or perhaps a recall notice.

This would be especially valuable for service from remote sites. The State Library has service points in the Legislative Office Building and the State Office Campus. Automated circulation requests directly from those sites are not now possible, nor from any of the other State government offices that have access to the online catalog. They should be.

The online catalog should also reflect the on-order file so that a patron will know whether an item has been ordered. This would be helpful for reference staff as well, who could determine whether to submit an order or not. Hence, the catalog — and the circulation system — should be tied to the acquisitions system.

In conducting an inventory, an item not on the shelf might be in circulation or misshelved or missing. Currently, the circulation and inventory systems are independent. The next step in developing this area is to permit inventory staff to search the circulation file when an item is not found. The circulation file indicates whether an item is in circulation or perhaps was reported missing earlier. Staff can decide whether to look further in the stacks or to reorder the item, or perhaps to withdraw it.

"...need for a mechanism to widen access to serial records...."

The LINX file of State Library serials is an independent database. It is used by serials processing staff, circulation staff, interlibrary loan staff, and reference staff. It is not accessible by the public or through the online catalog, although it is the most accurate and up-to-date record of serials in the Library. Clearly there is need for a mechanism to widen access to serial records and reduce further the number of special terminals in use.

In early 1988, the State Library will be in the process of installing a microcomputer-based binding control system. This will eliminate manual file maintenance of approximately 20,000 highly detailed records describing the binding treatment to be given to periodicals and journals. When all the issues of a volume have been received, the system will be used to generate the pattern slip for the bindery. The LINX serials check-in system is closely related procedurally to the binding control system. They are now independent, but they should be linked and mutually accessible.

Word processing software and bibliographic citation formatting software provide great flexibility for staff to prepare reports and bibliographies. The microcomputers used by staff are not currently linked to the catalog system or used for database searching. Their work will be facilitated when staff can switch readily between the online catalog or a vendor database or a CD-ROM unit to create reports, publications, research guides, or other tools for patrons.

TELECOMMUNICATIONS LINKS

Telecommunications allows service regardless of geography or physical location. Administrative offices, laboratories, research offices, agency libraries — all should have access to the records and collections of the State Library as though they were inside the Library. Units of the Library are linked to the extent possible now, but there is more to be done. Facilities are not adequate to allow access by patrons or researchers from home. This is a goal.

"...telefacsimile is clearly on the horizon for delivering material to remote locations."

Telefacsimile transmission is commonplace in certain environments, including some libraries. Bibliographic service ultimately depends on document delivery. While we now send books, photocopies and microfiche copies by U.S. mail and proprietary delivery services, telefacsimile is clearly on the horizon for delivering material to remote locations. Agency offices are located throughout New York State. It is a logical extension of State Library service to provide catalog terminals, access to circulation data, electronic messaging similar to that used for ExpressILL service, and facsimile delivery for State agency offices.

Teleconferencing terminals that switch from video image transmission to conventional computer terminal display are an appealing way to personalize the service delivered to remote locations. These terminals allow the librarian to talk to and see the patron or another librarian at a remote location. A catalog search, circulation system inquiry or database search might be conducted on the same terminal. Further, book or other document pages can be transmitted and displayed on the screen. The greater efficiency of visual contact and showing material in hand reinforces the value of this technology. The State Library hopes to install equipment of this kind in the near future as a model for remote State agency service.

The emphasis until now has been and in the near future will be on bibliographic citations in large databases — information about information through catalogs, indexes and abstracts. The exception to this is census data, which is provided online through the State Data Center network. Census users and the State libraries helping them all communicate with each other and exchange data by electronic mail and electronic bulletin boards.

INFORMATION DELIVERY

In the future, there will be greater emphasis on delivering information itself. The Library will use increased computer power, advanced storage technology, and State-sponsored communications networks to serve government and private researchers. Large-scale optical storage devices, fiber optic networks, and new computer processing architectures hold promise for sharing the text of volumes as well as bibliographic records.

Electronic preparation of manuscripts for publication is virtually standard in the publishing industry. Electronic storage and transmission, omitting the printing and preparation of physical documents, is on the horizon. Reference works, especially, by virtue of their regular updating, and the typical need to search them by subjects or names, lend themselves to electronic publishing. The future of the Library is clearly linked to the use of electronic materials on site and to the delivery of service and documents by electronic means.

SCHOOL LIBRARY SYSTEMS CHOOSE DATABASES

By Cynthia LaPier, Director,
Schuyler-Chemung-Tioga BOCES School Library System,
Elmira, NY

Schools today suffer much criticism in the educational process which supposedly does not adequately prepare our children for a successful future. School librarians are usually not included in the criticism because the criticizers do not understand the important and significant role that school libraries play in the academic achievement of students. School librarians must be self-motivated to maintain state-of-the-art technology in the library media center, to help students be totally prepared to deal with whatever new research techniques are being developed, and to help children feel comfortable with having an information need and following a path to fill that need.

Theodore Roszak uses the public library as an example in his book, *The Cult of Information* (1986). Roszak's only experience seems to have been with the public library, so he can be forgiven for not knowing that there are many types of libraries and library services available to each and every member of the vast library patron pool. He does make one interesting point that could easily pertain to a school or an academic library as well as to the public library:

> The library is not only there as a socially owned and governed institution, a true people's information service; it is staffed by men and women who maintain a high respect for intellectual values. Because they are also the traditional keepers of the books, the librarians have a healthy sense of the hierarchical relationship between data and ideas, facts and knowledge. They know what one goes to a data base to find and what one goes to a book to find. In their case, the computers might not generate more information for the public, but information itself is more likely to stay in its properly subordinate place in the culture.[1]

Obviously Roszak has in mind the stereotypical view of the librarian as the "keeper" of books. Today librarians do not "keep" anything; they may house books, but they should certainly not be found guilty of "keeping." There is also the implication that librarians not only understand how to use computerized databases, but actually do so on a daily basis. In other words, librarians are role models for the public in the use of technology in libraries. This is an assumption that may or may not be true, but certainly should be. The subordinate place in the culture phrase should be repeatedly used, tossed out at staff meetings, inserted in newsletters, written on bathroom walls, as a provocation for good discussion on information and its place — is it, perhaps, among the second class citizens of the world?

WHAT IS ONLINE SEARCHING ANYWAY?

Online searching used to connote the use of an online connection (usually through a telephone) to access indexing and abstracting services which were housed in a mainframe computer. A librarian could (re)search a topic and retrieve citations with summary abstracts. In the beginning, the printed copies were produced offline by the online vendor and mailed, usually within 24 hours, to the library or even to the patron. When librarians used the online method, they gave the impression of currency even though some databases were only updated monthly or semiannually.

Today online searching is much broader in scope. Of course, the original method is still the primary definition, but there are other methods that are also lumped into the categorical definition. "Online" has come to mean using a set of predefined commands to instruct a computer to search for references or resources. The computer may or may not search indexes or abstracts, and may or may not be online. It may also search numeric databases, directories, databases of full-text documents, or card catalogs. Online is an appropriate term if there is a computer involved, not necessarily an online connection. Currently a CD-ROM reader can provide access to the large indexing and abstracting services which are on a CD-ROM disk; or a microform reader,access to computer-output microforms of the database. Currency is by no means immediate with either of these methods, but the ability to access a large file of three or more years has become the online perspective.

TECHNOLOGY

The hardware requirements for online searching are basic: a microcomputer with minimal memory (even one of Big Blue's namesakes will work); a modem; and a standard telephone jack. In today's market, microcomputers are cheap; there is no other word to describe hardware which five years ago was

over $2,500 and today is less than $1,000. Modems have also dropped drastically in price; it is now possible to purchase a 300-1200-2400 selectable baud modem for the price of what a 300 baud modem was five years ago. The telephone jack in the school is the elusive piece of the puzzle. Schools traditionally do not have an overabundance of phone sites. School libraries equipped with a telephone are among the blessed few. If a phone is present, it is probably of the large cable style. These phone problems often appear insurmountable to the school librarian eager to introduce new technology and capabilities to students, but they are overcomeable.

If the CD-ROM reader is the preferred access route, a microcomputer is still necessary. At this point an IBM variety is the only choice, but within months we can expect to see interfaces between the CD-ROM and the Macintosh. A reader can be purchased for around $600-$1,000. The software cost depends upon the publisher and can range from $300 to $1,500. It is not always the most cost-effective method for a school library to buy on an individual basis, but it has definite advantages.

Any school library media specialist would be well advised to seek any of the standard literature sources on telecommunications or microcomputers which spell out very definitively the requirements for an online connection or a CD-ROM system. The only point to be made here is that the prices are usually overpriced in the literature, simply because in recent months computer prices have fallen so drastically.

ONLINE SEARCHING IN THE SCHOOL LIBRARY MEDIA CENTER

Online searching is not a new library skill, and it should not become an excuse for media skills instruction. It is simply an alternative method of finding sources of information, the focus not being on the tool itself but on the data retrieved. No longer is the emphasis on the *Reader's Guide*, why we use it, what it can do; instead the emphasis is on what information is needed to complete a project and where to go to get that information. This is truly what is meant by teaching library skills within the context of the classroom. Online searching can finally be the revolution that will revise the stereotypical view of the library and the librarian; they will become not sources of frustration, but sources of information as they were originally intended.

Online searching takes students beyond the bounds of the library. They begin to realize that a resource need not have an immediate physical presence, but that a remote presence is also valuable and useful. New York State school librarians are no longer in the unpleasant position of telling students that the resource is not available in their library and is therefore not available (not with a clear conscience anyway). School library systems provide interlibrary loan services that bring almost any resource in a New York State library to the school building upon request. School librarians now have the opportunity to develop the idea that students will get what they need to answer a question or to do research — not necessarily only what is readily available — to come up with the best answer or optimal research.

The librarian becomes a necessary component to distinguish between when to use computerized services and when not to, when it is indeed sufficient and economical to use the printed page, and when to resort to mechanized means of research. They act as guide to students and teachers to help them understand the significant difference in manual and computerized research, rely upon experts in certain areas, and become experts in their own particular areas of expertise and interest.

In an online situation, only search strategies that are logically prepared are successful; research project topics must be carefully and specifically defined; students are required to apply set theory and Boolean logic. One of the greatest resultant advantages is the widening of the student's perspective. Before leaving the fairly sheltered school setting, a student becomes aware that there is more to a library than *The Reader's Guide*. He or she learns that networking among libraries is widespread and pervasive, that in a school, public, or academic setting, one can borrow whatever is needed to complete an assignment. One learns to organize and be selective, in other words to be more fully prepared to face the impact of the information explosion.

ONLINE SEARCH SERVICE

Usually when we discuss online searching at the secondary level, we assume that what we are talking about is teaching students. But there is another important reason for librarians to initiate the use of online searching — to provide a library service for teachers, staff, administrators, and students. Of course, it is important to devote time to teaching students, but it is just as important to provide the access to resources. It is not beneficial to teach administrators to do their own searches, but it is very beneficial for the librarian to provide research data for them. By doing so, the librarian makes the administrator aware of the possibilities in the library today. How many of us did our research from printed indexes, how many of us were able to take advantage of a computer-generated bibliography? Administrators need

this kind of support to do their jobs well and thoroughly. Students today will face this prospect as adults, whether they go to college or not.

SCENARIO:

A student comes into the library and asks for a book on Greek mythology.

The librarian: 1) goes to the shelf and pulls off a book, or
2) takes the student to the card catalog to find a book.

If the school library media specialist answers "1," providing an online service for members of the school community will be the online choice. The librarian is then perceived as the expert who knows how and where to find information and has incorporated technology into the process. In order to teach higher level thinking skills, the librarian will help students understand that although a bibliography is provided by a librarian and is in print, it may not be valid. The librarian will show the student how to determine reliability, how to distinguish facts and claims, and so on.

If the school library media specialist answers "2," teaching students how to do their own online searches will be appropriate. In this instance, the focus is on structuring an approach to fill an information need. The librarian provides a role model for developing the research procedures.

"...online searching...will bring about betterment in service."

Fortunately, either or both choices are valid. There is a lot of leeway for a school librarian to develop an online service with which he or she is personally comfortable, for which there is funding, and that allows the most time to devote to establishing a quality program. It is important to emphasize that either way online searching is introduced into the school community will bring about betterment in service. Whether the students do the searches or the librarians arrange to have searches conducted elsewhere, the benefits of new technology will be introduced, the students will still benefit from interlibrary loan, and they will still have to evaluate citations and bibliographic data and make determinations about the validity of the resources that they are gathering to meet their information need.

GOALS AND OBJECTIVES FOR TEACHING ONLINE SEARCHING

In order to convince an administrator or a school board or fellow teachers of the worth of a service, the school librarian should establish some goals and objectives, especially goals and objectives that are not "libraryese." The following is just a sample of many possibilities:

1. The student will gain an understanding of what online searching is and the various formats for online searching.
2. The student will learn Boolean logic as it relates to a real-life research situation.
3. The student will learn how to evaluate a database and select a database for each particular project.
4. The student will understand the concept of keyword indexing, free-text searching, and the use of a thesaurus.
5. The student will be able to develop a research strategy for an offline manual search and for an online search. The student will understand the difference.
6. The student will be able to read the bibliographic record resulting from an online search and will be able to take the necessary steps to locate the material.
7. The student will realize that the school library media center is a part of the revolution in information technology, that libraries are not limited by their existent walls, and that libraries do respond to changing patron needs and demands.

ESTABLISHING A SEARCH SERVICE

1. Determine the problem (needs assessment), the best possible and reasonable solution, and the action to resolve the problem and fulfill the solution.

Everyone has had enough of needs assessments and surveys, but they are necessary to plot out the problem. A television episode of "Little House on the Prairie" deals with school curriculum and the question of whether or not it is appropriate for future farmers to study French when what they should be studying is agriculture (the new science!). We, too, need to consider the futures of our students: is it appropriate to teach the details of telecommunications or would it be more beneficial for their future lives to teach them that informed decisions are better decisions?

2. Provide the deciding administrator with information needed but which you would not be able to retrieve in any other method than through an

online search. When you show your supervisors how a library program can benefit them personally, you will always be more successful in initiating that program.

3. Go to a training session on online searching. It will also be necessary to determine what the hardware requirements are.
4. Develop goals and objectives for the program — either online search service or teaching students.
5. Determine the educational objectives: do they mesh with the mission of the district?
6. Money — obviously some money will have to be expended for equipment, for online service connect times and for database charges. Online costs can be handled on a subscription basis that is completely open-ended, or on a per-search cost basis, which is fixed and much easier for the administrator to plan. See the appendix for more information on some of these fixed-cost services.
7. Time — whether the service is being provided or being taught to students, the librarians can expect to spend a lot of time working on just this project. The technology is unfamiliar to both the librarian and the students; considering the school telephone situations, bugs will probably have to be worked out in order to complete successful telecommunication; the librarian will have to become completely familiar with the service's search language; and the searches themselves will take time.
8. Get involved in resource sharing and collection development. Eventually the interlibrary loan requests that result from online search citations can be used to help develop collection needs. Finally it will become necessary for school librarians on limited budgets to band together to cover all the needs within a geographical area instead of trying to do it within a building.

HIGHER LEVEL THINKING SKILLS

Whether the librarian performs the search or the student does, the opportunity of the online search should be exploited to the greatest extent for providing higher-level thinking skills and lifelong learning for the student. The focus shifts from location skills to process skills. The process fosters free inquiry learning and metacognition. This is an opportunity to fully integrate library instruction with the classroom; the library program becomes critical to the instructional mission of the school because it becomes an integral part of the educational process. In order to be fully competitive with the rest of the world in youth and adult life, students will have to be familiar with assignments that require problem solving, analysis, synthesis, and presentation. It is the responsibility of the school librarian to either initiate or support this process by working closely with administrators and classroom teachers and by introducing the latest technology into the media center. Resource learning is a holistic approach to learning: the process depends upon the need. It will be essential for the librarian to be very flexible and to have a good working relationship with the classroom teacher, so that when a need arises, the team of student, teacher, and librarian can work together to fill that need. The team will discover each other's learning styles, will increase communication, and will be role models for one another as well as for other teams. The student will gain a real life vision of how a content expert and a research expert can collaborate to arrive at a viable solution.

ALTERNATIVE METHODS OF PROVIDING THE SERVICE

There are always going to be some schools, some situations, where, no matter how long and hard the school librarian works to convince administrators that online searching is a valuable expenditure of public funds, approval for a service may not be immediately forthcoming. The librarian does not have to give up. Students will probably not be able to do their own searches online, but they can cover all the other steps of the process. Several alternative methods are as follows:

- Searches can be formulated at the school site and forwarded to the school library system, the reference and research library system, or the public library (system). This will also provide an opportunity for further multitype library cooperation, for better communication among different types of librarians, and for future cooperative collection development.
- An established vendor password can be used on any machine at any time by anyone. Several libraries can work together, open an account, establish some rules, and spread out the costs. The district could establish one account, with a certain amount of money, and the librarians could agree how that money would be spent and by whom. In the worst case, students could travel to one site, if there were only one available hardware setup, to conduct their searches.
- School librarians could request that school library systems provide assistance, whether through a shared password arrangement, through fixed cost databases, or by actually conducting the searches.
- A group of school librarians, possibly through their school library system, could acquire a database on a CD-ROM disk. Librarians, students, and teach-

ers can then learn the process without the high telecommunication costs. The Boolean logic and set theories would still apply, higher level thinking skills would still be appropriate, and the telephone would simply be eliminated.

This is also an alternative for training before the searcher actually goes online. There are a lot of possibilities with the CD-ROM. A union catalog on CD would provide the student with Boolean logic practice, with the concept of specificity, and with familiarity with the interlibrary loan process. The CD offers different levels of the process: a union catalog would be fairly simple and easily understood by elementary students; a database service would be more complicated and appropriate for secondary students.

IMPLICATIONS/WHAT HAPPENS AFTER THE SERVICE IS DEVELOPED

Probably one of the very first things that will happen after online searching begins is that the school library media specialist will cry out in agony, "Why did I ever start this?" Online searching takes time and time and more time — in the beginning. Eventually it will be time well spent, but initially the training, the setup, the demonstrations, and the constant talking and thinking about it will take lots of time.

Library patrons who experience the ease and satisfaction of an online search will never want to do manual research again. To prevent hard feelings, school library media specialists should develop some guidelines for the service: who will benefit; what is required of the requester; how much lead time will be necessary; what databases will be available (depends upon the cost); how many citations will be provided (another cost factor); who has the prerogative to deny a search — it may be a one-word topic, or too complicated, or easily found in an available print source; and who foots the bill.

Interlibrary loan will prove to be the great nemesis for us all. It is a service without which libraries today will not be able to satisfactorily serve all patrons equally, but it is a service that takes a great deal of time and effort, both from the borrower's and the lender's perspective. Patrons have to be trained to use the interlibrary loan system with respect, without frivolity, and only when necessary. Lending libraries have to either fill requests within a reasonable time or immediately return the unfilled request. But most important of all, students will have to unlearn the fine art of procrastination.

When using a CD-ROM database or encyclopedia, it is very easy and effective to store the search on a floppy disk to be printed later. Eventually students will realize that they can manipulate this data on a disk with any word processor when they write their papers. This is really a great way to get rid of 3 x 5 note cards and take advantage of automation. But it will also be necessary to impress even more strongly than ever before the consequences of plagiarism. It may be important to consult teachers about the writing process. It is possible that the use of computerized research will bring about a complete change in the composition process as well as the research process. The writing process will probably take longer because students will have to evaluate citations, select the actual articles, retrieve the articles, and then synthesize the data. Students are also going to have to be very well informed about library vocabulary. Words like "abstract," "citation" and "bibliographic" will have to become best friends.

"...computerized research [may] bring about a complete change in the composition process as well as the research process."

Finally, there is an important implication for the employment of the school library media specialist. If a school librarian is looking for employment and is leaving a situation where online searching is available, schools with the service or willing to develop a service will be much more attractive. It is very difficult to change jobs and lose reference capabilities, both professionally and personally. Schools are going to be competing with each other more and more in the future for the few available school librarians: online searching may be a deciding factor in the employment process.

AND SO...

Online searching is not simply an opportunity to push more media skills. If there is not a reason for the skills, if there is not a valid application, don't teach them. If the school library media specialist believes that through online searching a student will gain a better understanding of information retrieval that will be beneficial in adult life, if a student will refine present acquired research skills, and if he or she will have a broader perspective on the diversity of information and knowledge and its various formats, then teach online searching.

REFERENCE

[1] Roszak, Theodore, *The Cult of Information, the Folklore of Computers and the Ture Art of Thinking*, New York, Pantheon Books, 1986. p. 172.

BIBLIOGRAPHY

Classmate, Dialog Information Services, Inc., *Classmate Instruction Program, Student Workbook*, CA, Dialog Information Services, Inc., Instructional Services Group, 1986.

Mancall, Jacqueline C, "Training Students to Search Online: Rationale, Process, and Implications," *Drexel Library Quarterly*, 20 (winter 1984). pp. 64-84.

Mancall, Jacqueline C., Aaron, Shirley L., and Walker, Sue A., "Educating Students to Think: The Role of the School Library Media Program," *School Library Media Quarterly*, 15 (Fall 1986). pp. 18-27.

Pennsylvania Online: A Curriculum Guide for School Library Media Centers, Harrisburg, PA, Division of School Library Media Services, Bureau of State Library, Pennsylvania Department of Education, 1985.

Roszak, Theodore, *The Cult of Information, the Folklore of Computers and the True Art of Thinking*, New York, Pantheon Books, 1986.

Schrader, Susan, "A Curriculum Guide for Online Database Searching with High School Students," Ankeny, IA, Heartland Education Agency, 1985. ED 256 373.

Secondary Library Media and Information Skills Syllabus, Grades 7-12, Albany, NY, Bureau of Curriculum Development, Bureau of School Library Media Programs, State Education Department, University of the State of New York, 1986.

APPENDIX

FIXED COST SERVICES

Einstein
Access to 85 databases chosen for usefulness in schools, varied price structures. Service can be had for $4.50 per search up to eight references plus one full-text article or abstract if available. This is offered only through Telenet. They will send four free passwords to try system. Any telecommunications software package for Apple or IBM is appropriate.

(800) 227-1936, ext. 214
Addison-Wesley Publishing Co.
Sand Hill Road
Menlo Park, CA 94025

WILSONLINE
Access to the H.W. Wilson indexing services. Several subscription levels, minimum is $300 per year. There are educational rates for instructional use. A special software package is available that controls the number of references displayed or printed. A demo disk is available providing 20 searches for $20.

(800) 367-6770
H.W. Wilson
950 University Ave.
Bronx, NY 10452

TEACHING STUDENTS

Dialog Classmate program to teach online searching BRS/EDUCATOR password to teach online searching CD-ROM

Information Access-computer output microform of *Magazine Index* and *Magazine Index on CD-ROM*

ERIC — OCLC CD 450, Silver Platter, Dialog

Grolier's Encyclopedia — it may be just an encyclopedia, without illustrations, but it does utilize Boolean logic and specificity.

Article evaluation is also appropriate.

McGraw Hill Science and Technology, Concise Encyclopedia and Dictionary — great for those hard-to-fill science requests

PERIODICALS TO PERUSE

CD-ROM Librarian
CMC News
Small Computers in Libraries
Wired Librarian
Library HiTech and News
CD-ROM Review

APPLYING AN ONLINE SEARCH TO BLOOM'S

QUESTION:

Do jocks have the same academic success in high school as nonjocks?

KNOWLEDGE:
Define key words, find synonyms:

- jocks
- academic
- success
- high school
- nonjocks

COMPREHENSION:
Compare and contrast jocks and nonjocks.

How do you measure academic success?
Is there success in high school other than academic?

APPLICATION:
What is the function of physical education?
How will you classify jocks?

ANALYSIS:
What evidence can you find to support success of students?
What evidence can you find that categorizes jocks contrasted with other students?

SYNTHESIS:
What would happen if all students were forced to be jocks,...to be nonjocks?
If you have found that jocks or nonjocks succeed or fail, how could that be improved?
What would happen if academic success were not measured?

EVALUATION:
Do you think high school students should be allowed to participate in extracurricular sports?
Do you think all students should be actively involved, or not at all?
Do you think academic success is based on participation or nonparticipation in sports?
Do you think your findings would also apply to chorus, band, theatre, or other extracurricular activities?

SEARCH STRATEGY
(jocks or athletes) and (academic(w)success) and (secondary or high(w)school)

INDEX ON DISC CONVERTS PERIODICAL SEARCHES FROM A CHORE INTO A POPULAR PURSUIT

By Linda Locke,
Reference Librarian,
Scarsdale [NY] Public Library

Changes in information storage and machine retrieval have been quietly gathering momentum in libraries. Business and professional libraries were early users of expensive telecommunications systems. They have enjoyed the funds for online time and staffs trained in the computer languages needed to access databases. Therefore, to a small cadre of researchers, Lexis, Nexis, and Dialog have already become household words.

NEED FOR COMPUTER REFERENCE SERVICE

Now, public libraries are turning their attention to computer-aided reference service. Demand for current periodical information at Scarsdale Public Library, in a suburb of New York City, is increasing steadily. More and more people are involved in continuing education programs and related research.

"...CD-ROM technology to provide an index on compact disc."

The public library is challenged. With a good deal less money than large research or business libraries and fewer professional staff members to give individualized reference service, the public library needs a computer reference service that is financially feasible and user friendly so that patrons can operate it with minimal instruction. The online database systems that are updated daily and involve special computer languages would not fill the bill for the patron who wants to participate in the research process. Therefore, we looked to CD-ROM technology to provide an index on compact disc.

Last year, Scarsdale Public Library decided to explore its options. A medium-size library, Scarsdale ranks fifteenth in size of population it serves, among the 38 public libraries in the Westchester County system. Yet total book circulation ranks Scarsdale sixth in the County, right behind the biggest libraries. Per capita, it ranks second.

Two thirds of our patrons are Scarsdale residents, a group committed to high educational standards for their children, as well as for adult education. Towns surrounding Scarsdale Village are absorbing many businesses from nearby New York City. Executives are turning to the local public libraries for statistics and other information. In addition, one third of the library's users comes from the surrounding communities for a variety of reasons, including the high quality of reference service provided by long-time staffers and an active interlibrary loan and reserve policy that can provide readers with almost any books they want.

However, the usual space and budget limitations shift the demand for up-to-date reference information from books to periodicals. Scarsdale Public Library subscribes to 235 periodicals, making this collection a major arm of reference service.

JUSTIFICATION FOR CHOOSING INFOTRAC II

These were reasons enough to look beyond the traditional print periodical and microform indexes to an optical disc reference database, despite its expense. Infotrac II, a product of Information Access Company, provides an economical, single-access station, CD-ROM magazine index. In fall 1986, Scarsdale became the first library in Westchester to take advantage of the manufacturer's three-month free trial offer. A more expensive option, Infotrac I, which can support one to six access terminals and covers about 900 periodicals with five years of data, was deemed too expensive and too large in scope for our purposes. After the trial period, we went ahead with the purchase. This decision was based on our librarians' experience with the service and on the findings of a brief questionnaire. Placed beside the machine, it asked patrons using the service to answer a few questions on ease of use and completeness of information.

The concepts behind the new library buzzwords — optical discs, CD-ROMs and telecommunications systems — are simple enough. Infotrac II is an automated reference system that provides computer-aided retrieval of bibliographic references stored on a compact disc. The system contains citations from 400

titles in the Magazine Index Plus database for the current year cumulated with data from the previous three years. The periodicals in this database cover a spectrum of general interest from consumer product evaluations and reviews of books and the performing arts, to the scientific, political, and social titles most in demand in public libraries.

"...Index to magazines most used in colleges...helpful... in a college community."

Early this year, an Academic Index to magazines most used in colleges became another option for Infotrac II — a helpful addition for public libraries located in a college community. Infotrac II also indexes the two most current months of *The New York Times,* a service now not available from the *Times* itself. These citations are updated monthly when a new disc arrives in the mail. A back file of citations from 1977 is available on microfiche.

The popularity of Infotrac II rests on its ease of use and its immediate presentation of cross-reference information. Data are indexed by Library of Congress subject headings or new headings provided by the manufacturer but not yet in use by the Library of Congress.

FAMILIARIZING PATRONS WITH COMPUTER PROCESSES

To many public library patrons, computers are still startlingly new. They are often amazed to see their peaceful town library suddenly go high tech, with whirring printers, microfiche readers and personal computers.

For these reasons, we looked to our younger patrons to lead the way. As a precaution, we installed Infotrac's microcomputer, silent printer and monitor on a table convenient to the reference desk so librarians could offer help with the function keys. As it turned out, young students needed little instruction since they are more at home with a keyboard and a printer than with the pages of a print index.

They type the name or subject they are searching in the lighted square on the screen. When they press the color-coded search-and-enter key, a citation or cross reference appears on the screen. Pressing the print screen key produces a printout of all the citations on the screen; "print ref" produces a printout of the single reference selected. In addition, a librarian can program in a subheading to obtain faster, more precise searching of broad topics.

"The next step...young people urge their parents to try."

The next step in the familiarization process is that the young people urge their parents to try. Gingerly sitting before the computer, mothers and fathers key in subjects ranging from infant car seats to play reviews. One tap on the search-and-enter button produces the desired citations in 10-20 seconds. The patrons, able to search without copying out citations, are encouraged to investigate tangential aspects of their topics.

MATCHING HOLDINGS TO COMPUTER DATABASES

One of the more interesting — and time-consuming — results of installing Infotrac II has been the reference staff's need to evaluate our magazine holdings. As patrons appeared with an Infotrac printout and requests for magazines we did not have, we soon realized we would have to add to our magazine holdings and drop others not covered by Infotrac. Of course, all libraries regularly review their periodicals. However, in Infotrac's case, immediacy comes into play — to the librarian's benefit. Citations that appear on a printout but cannot be supplied are a better-remembered guide when ordering periodicals than are patrons' casual requests.

"CD-ROM could...become the center of the reference room."

The growing popularity of magazine searching on CD-ROM means that this technology will be used to index other standard library works. CD-ROM could very well become the center of the reference room. For example, Bookshelf, published by Microsoft, combines a dictionary, thesaurus, almanac, zip code directory and other sources. Also, Lotus is publishing 1.5 trillion pages of financial data on a subscription format.

At Scarsdale Public Library, we are looking ahead to similar technological change. Soon, we will speed

interlibrary periodical information through digital telefacsimile. We have begun a search service using Knowledge Index, an online adjunct of the Dialog database that contains a range of information spanning as much as eight years. And when the task of computerizing the book collection throughout the library system is complete, we will be able to offer optimum information service to a curious and very eager public.

SUMMARY AND EVALUATION OF NEW YORK STATE LSCA PROGRAM, FY-1986

INTRODUCTION AND RELATIONSHIP TO STANDARDS

The libraries of New York State are committed to meeting the information and cultural needs of a large and diverse public. The Federal Library Services and Construction Act and accompanying regulations establish requirements, specific purposes and priorities for the use of Federal funds. In New York State $4.6 million in LSCA Title I funds were matched by $37 million in State aid to libraries. In addition, the Legislature appropriated $21 million in other State aid for library services and $6.4 million for the operation of the State Library.

Library development in the State reflects the leadership shown by the Board of Regents, whose powers are provided for in the State Constitution. The Regents and the Commissioner of Education determine broad policy and standards for education in New York State. The Regents have adopted the following policy statement: "Every resident of New York State should enjoy timely and free access, through local libraries working within library systems, to a full range of informational resources and services provided without restriction of censorshop or violation of privacy."

The more than 7,700 libraries in New York State are diverse — ranging from those the size of the North Chatham Public Library serving 450 people and open 12 hours a week with a collection of 1,581 books, or a high school library serving 400 students, to the vast collections of research libraries such as the Columbia University Libraries and The New York Public Library. Each library, whether large or small, fulfills a specific role for its own user populations. Today, however, increasing costs, an information explosion and the rising expectations of users are such that no library can stand alone; resource sharing is fundamental to the operation of today's library. To assist this resource sharing, the Education Department and the library community have developed a systems approach to library service. This encourages and helps libraries to work together in the development of coordinated networks to attain the goal of convenient free access. The library systems of New York State strengthen the services and enrich the resources of local libraries. They provide the structure within which continuing cooperation can take place.

The Federal Library Services and Construction Act requires each state to develop its own plan for meeting goals through means appropriate to its own situation and level of library service development. In New York State, library systems are the channel for distribution of Federal funds for programs to improve services. Each year, two-thirds or more of the Federal apportionment to New York State under Titles I and III is disbursed in grants to the 22 public library systems, 9 reference and research library systems and State institutions for service projects intended to improve priority services.

EXPENDITURES

Library Service to the People of New York State, 1985-90, outlined 9 program objectives and 51 specific tasks proposed to accomplish these objectives. The FY 1986 *Annual Program Statements* for Titles I and III described 17 projects and allocated funds for this program. This report describes project accomplishments in relation to the program objectives. Appended are individual project reports, including those for 96 LSCA grants administered by library systems or State agencies other than the Education Department. Summarized, the projects in the *Annual Program Statements* are:

Actual Expenditures

Title I Projects	State Funds	Federal Funds
1. State Aid for Improvement of Library Services	$36,500,461	$0
1A. Grants for Improvement of Library Service Through Systems	0	2,042,891
1B. Grants for Strengthening Major Urban Resource Libraries	0	503,879
2. Institution Library Service	0	49,257
2A. Grants for Institution Library Service	0	76,462
2B. State Funding for Operation of Institution Libraries	2,123,862	0
3. Service to Blind and Physically Handicapped Persons	361,551	158,500
3A. Grants for Services to Blind and Physically Handicapped Persons	495,000	114,000
4. Strengthening the State Library	3,996,379	477,436
4A. Strengthening Library Development	541,140	628,501
5. Administration	505,471	408,290
TOTAL	$44,523,864	$4,459,216 *

Actual Expenditures

Title III Projects	State Funds	Federal Funds
1. Improved Interlibrary Loan and Database Operations	$ 621,043	$377,290
2. Serials Database Development	0	0
3. Reference and Research Library System Program for Interlibrary Cooperation	2,549,698	0
4. Regional Bibliographic Database and Interlibrary Resources Sharing	1,299,991	0
5. CONSER	0	145,266
6. Grants for Interlibrary Cooperation	0	903,843 **
TOTAL	$4,470,732	$1,426,399 ***

The largest portion of the LSCA funds from Titles I, II and III was expended in grants to systems and to other State agencies for operation of programs. Grants totalled $3,641,075 or 63 percent of the FY 1986 LSCA funds. Statewide service projects administered by the Education Department include (Title I) 2, 3, 4, and 5 and (Title III) 1, 2, and 5. Expenditures for these totalled $1,836,250 or 31 percent of the available LSCA funds. Statewide services included library development, interlibrary loan support, database development, publications, conferences, provision of special consultants in such areas as institution library service, automation, and library services to blind and handicapped persons. Administration costs totalled $408,290 (6 percent of Titles I, II, and III).

The LSCA Title II funds totalling $1,274,361 were totally expended for grants. Grants were made in April 1987 for 17 projects, with matching funds from local sources totalling $5,249,470.

---

* Includes FY 1985 carryover funds.

** Includes $404,712 for Invitational Grants beyond the Annual Program Statement.

*** Includes FY 1985 carryover funds.

LSCA PROGRAM ASSESSMENT BY OBJECTIVES

Objective 1. Quality service for all persons in their local communities.

Task 1.a

Provide to local libraries of all types information on the resources available to their users (current and potential) through library networking.

Accomplishments

In New York State three types of library systems — public, reference and research, and school — and the New York State Library provide information, materials and assistance to local libraries. State Library services both to systems and to individual libraries were provided in FY 1986 through more than 5,723 consulting telephone calls, 251 consultant visits and 7 continuing education programs with more than 800 participants and 5 statewide conferences with 600 attendees.

Information on resources is becoming computer-based but also is available through more traditional means. Seventy-six systems publish newsletters to inform member libraries and others of available services. Systems reported using cable TV, workshops, community agencies, TV announcements, radio programs, learning networks, posters and fliers to inform current and potential clients of resources.

Thirteen LSCA grants were made to enable four public library systems and seven reference and research library resources systems in nine regions to continue conversion of bibliographic data to machine-readable form, improving access to system union catalogs.

Ten LSCA grants to nine reference and research library resources systems for improved access to serials holdings provided public library users with complete and current information about resources.

An LSCA grant supported a continuing education calendar distributed to all library systems by paper and by NYLINE.

NYLINE, an electronic communication system supported by an LSCA grant, carried information about statewide library developments to public library systems, reference and research library resources systems, school library systems, and central and cocentral public libraries. The New York State Library sent 7,695 messages in 1986.

Forty-two Assistant Commissioner's Memoranda carried information about statewide library developments to public library systems, reference and research library resources systems, school library systems, regional networks and central and cocentral libraries.

Four issues of *The Bookmark*, published by the New York State Library, discussed current library issues such as "Literacy and Libraries," "Health Sciences Libraries," "Institution Library Service," and "School Libraries." *The Bookmark* is distributed in quantity to all systems for system staff and trustees and is mailed directly to all libraries that are members of systems.

The 1985 edition of *Public and Association Libraries Statistics* was compiled and issued, detailing resources of the State's public and association libraries and public library systems.

Task 1.b

Continue to seek new legislation favorable to library development in the State.

Accomplishments

The Regents 1986 legislative proposal for libraries was amended and enacted into law. The proposal provided increased aid to Indian libraries, public libraries, public library systems, academic libraries, hospital libraries, and reference and research library resources systems. The legislation increased aid for special programs such as Coordinated Outreach Services, Regional Bibliographic Databases for Resource Sharing, and Preservation and Conservation of Research Materials. In addition, funds were provided for literacy programs and construction.

Task 1.c

Strengthen services to persons with limited English-speaking ability by continuing to identify such users (and potential users) and providing programs and resources, including nonprint materials, for their use.

Accomplishments

The expanded State aid for Coordinated Outreach Services programs provides $42,000 plus 10 cents per capita in 1986 for each of the 22 public library systems based on a plan for outreach services to designated groups. These plans identified over 3.2 million persons with limited English-speaking abilities. Funds have been used to provide bilingual training for staff in city branches where foreign-born groups are concentrated; to expand foreign language materials collections; and to work with other community groups to provide English-as-a-Second-Language (ESL) programs.

Two LSCA grants totaling $20,643 were made to public library systems to acquire materials to provide services to people for whom English is a second language and to offer tutoring to this segment of the community. The reported heavy use of these materials indicates how vital this service is to the

community. Two hundred nineteen people were tutored in these ESL programs. Four LSCA outreach projects totaling $409,925, which specifically served bilingual needs, were LEAP (Buffalo and Erie County Public Library); SPECIAL SERVICES (The New York Public Library); HISPANIC COMMUNITY OUTREACH (Pioneer Library System); and OUTREACH (Upper Hudson Library Federation).

Through LEAP and its RAM van, the Buffalo and Erie County Public Library offered 1,364 hours of programming to 20,973 people. At The New York Public Library, provided a Spanish/English Directory of Community Services with supplements based on contacts with over 200 agencies. Regular bilingual staffing was provided to 449 users at a Rochester (Pioneer) branch library located in the city's Spanish-speaking section. Upper Hudson provides ESL programs and literacy tutoring in libraries and local jails.

Task 1.d

Provide materials and services designed to help functionally illiterate persons begin to use libraries.

Accomplishments

Thousands of adults and young adults who lack functional reading skills were served through LSCA-funded library literacy education projects coordinated by 15 public library systems in 1986. $252,459 in LSCA funding went to support library literacy projects that provided materials, space for tutoring, publicity and tutor training and recruitment services. In addition, several adult independent learner and outreach LSCA projects have literacy components. Most of the literacy projects were operated in conjunction with local Literacy Volunteers of New York State and Laubach Literacy community-based affiliates. In addition, at least four of the literacy projects have become active in local and regional literacy coalitions composed of representatives from libraries, adult basic education programs, literacy volunteer groups, colleges, public television stations, correctional institutions, governmental agencies, businesses and community groups. Buffalo and Erie County Public Library forged strong links with the Western New York Adult Literacy Coalition. Clinton-Essex-Franklin Library System took the lead in forming the North Country Literacy Coalition. Many public library systems cooperated with local ABC and PBS television affiliates and adult basic education providers to support local activities related to the national PLUS campaign.

Nine of the 15 projects provide support for tutoring services for students in public library sites. In 1986, 1,541 students were tutored for a total of 76,547 hours. If volunteers were paid $5 an hour, the tutoring services provided would have cost a total of $382,735.

The Chautauqua-Cattaraugus Library System's Literacy Volunteer program began using videotapes to train tutors.

The Chemung-Southern Tier Literacy Volunteers project increased the number of students being helped by 25 percent.

Clinton-Essex-Franklin purchased 212 volumes of adult new reader materials to support the activities of 5 LVA affiliates in its service area.

Task 1.e

Provide materials and services to disadvantaged persons.

Accomplishments

In addition to purchasing 5,300 volumes to support literacy in 42 branch and member libraries, the Buffalo and Erie County Public Library cooperated with regional PLUS campaign activities, including a visit by Wally "Famous" Amos. Sixteen of the system's member libraries provide space for tutoring.

The Library is also working with the local public television station, WNED, on cooperative literacy projects.

Finger Lakes Library System continued a literacy project with the purchase of 239 volumes of adult new reader materials.

Other systems such as the Mid-Hudson Library System, the Mohawk Valley Library Association, Suffolk Cooperative Library System and the Westchester Library System used LSCA funds to hire literacy project consultants or coordinators to manage broad-based community literacy projects. The Westchester Literacy Volunteer Program is one of the largest in the country, with almost 400 tutors serving 397 students.

The Four County Library System used its LSCA grant to purchase 1,000 volumes of adult new reader materials, and Nioga purchased 271 volumes. Onondaga purchased 62 System 80 kits for in-library use by 5,718 users.

In addition to their one-to-one tutoring program which served 223 students in 1986, the Queens Borough Public Library offered "pre-ABE" classes designed to prepare students for entrance into adult basic education and pre-GED programs and "Writing Skills" classes. Queens uses microcomputers with many of its literacy students.

Forty-two LSCA grants supported improved information to library users about learning and employment opportunities and citizenship by supporting the purchase of bilingual materials and providing for literacy training.

The Coordinated OutreachProgram identified over 2

million persons in New York as culturally isolated and 3 million as educationally disadvantaged. LSCA grants provided approximately $510,252 to 18 library systems for Adult Learner, Job Information Centers/Education Information Centers. Over 400,000 users received such services as consumer information, educational counseling, homework reference services, literacy tutoring, assistance in career and job searching, resume writing, and Civil Service test tutorials through workshops, materials, and information and referral services.

System outreach activities resulted in creative, useful programs. Examples of these activities are:

- Buffalo and Erie County's Project LEAP offered 1,364 hours of special programs to 20,973 people as well as specialized services to urban populations.
- Upper Hudson's Outreach Services project serves the institutionalized, minority groups and undereducated. More than 2,000 people attended 1,888 hours of special programming.
- The New York Public Library's Special Services Project offered 5,712 hours of special programs to 14,283 people. This service was extended to homeless persons. More than 5,000 preschool children reside in shelters for the homeless in NYC.

Task 1.f

Encourage libraries to seek out and serve minority persons.

Accomplishments

The 1980 census identified 4.7 million persons in minority groups in New York State. Data collected by the public library systems as part of the coordinated outreach program show LSCA projects in New York State serve minority groups through "umbrella" services. These services develop central resources to serve multiple needs and such specific programs as the Langston Hughes Community Library and Cultural Center (Queens Borough Public Library — $128,250), which serves the black community of Corona-East Elmhurst and the Pioneer Library System's Hispanic Outreach project ($15,675), serving the Hispanic population of Rochester. More than 33,000 people used the Langston Hughes Community Library and Cultural Center. Over 1,000 hours of special programming were given and attendance for these events was 14,761. One hundred twenty-six people attended six programs provided by the Hispanic Outreach project at Pioneer Library System.

Onondaga County Public Library offered a special program for disadvantaged and troubled youth entitled Urban Education for Survival. The project provided 20 youth with civic awareness and conflict resolution and human relations skills.

Fifty LSCA "umbrella" projects for children, adult learners, unemployed persons, people with physical handicaps, educationally and culturally disadvantaged persons and institutionalized persons serve minority people within such groups. In addition to convenient locations designed to encourage use of services and programs, easy access is provided by vans and bookmobiles. All library systems with sizeable minority groups report heavy use of outreach services and extensive community networking.

Task 1.g

Promote the development of business and financial information centers in public libraries by annually funding, through 1989, pilot projects for such centers in strategically located public libraries.

Accomplishments

No LSCA grants were awarded for business and financial information centers in public libraries. Two library systems receive special State funding for this purpose: Brooklyn Public Library and Buffalo and Erie County Public Library. A statewide business information directory was compiled for distribution at two New York State Preliminary White House Conference on Small Business meetings.

Task 1.h

Increase efforts to reach potential users.

Accomplishments

Each of the more than 50 AIL/JIC, literacy and other outreach projects funded by LSCA reported new users who were not previously aware of available library services or who were unable to use conventional materials and programs.

Four LSCA grants, totalling $161,596, have attracted new users to libraries and made local organizations aware of library services:

- Brooklyn's The Child's Place attracted 44,813 preschoolers and their parents with 862 hours of special programs in 1986.
- Finger Lakes' Hearing Impaired Grant circulated equipment 476 times to the deaf or hearing impaired.
- Chautauqua-Cattaraugus Library System's Bi-Folkal Kits project trained member librarians to use multimedia, multisensory kits with senior citizens.
- Nioga Library System began a Senior Information Center which provided information and referral to 297 senior citizens. Nioga Library System also began Teen Coping Centers in two of its libraries. More than 9,500 young adults used the personal/crisis information and referral service offered through this project.

Objective 2. Improvement of library systems, their resource libraries, and further development of intersystem cooperation, making it possible for libraries of all types to serve their readers effectively and more completely.

Task 2.a

Sponsor a comprehensive study of library services and systems as a basis for planning for library services in the 1990s.

Accomplishments

In 1986 the State Library received State funds to hire an associate to direct the proposed comprehensive study of library services and systems. This study will serve as a basis for planning for library services in the 1990s. The associate was hired at the beginning of September and began drafting a preliminary discussion paper. That paper will eventually be used to stimulate discussion and build consensus on the mission and content of the study and also will become the basis for a Request for Proposal for consultant services.

Task 2.b

Encourage cooperative programs that enable systems to provide needed resources and services to member libraries.

Accomplishments

State aid supported public library systems and reference and research library resources systems emphasizing cooperative programs and resource sharing. Programs that illustrate shared resources and provide improved services for a single type of system are:

- Twenty-two grants totaling $6.3 million to public library systems for the further development of 26 central and cocentral libraries.
- Twenty-two grants to public library systems to improve outreach services to persons who are educationally disadvantaged, are members of ethnic or minority groups in need of special library services, are unemployed and in need of job placement assistance, live in areas underserved by a library, are blind, physically handicapped, aged or confined in institutions. Each system received a base grant of $42,000 plus 10 cents per capita for the population of its service area, a statewide total of $2.7 million.
- $175,000 in grants to public library systems for library service to inmates of county jails and $340,000 for service to inmates of State correctional facilities.
- $213,763 State aid to four libraries on Indian reservations to provide local service and to enable them to join public library systems.
- State aid to the nine reference and research library resources systems was increased to $230,000 per system plus $1.15 per square mile and five cents per capita, a total of $3.0 million statewide.
- A State aid program for improved library service in hospitals was administered by nine systems.
- One hundred seventy grants to academic libraries for coordinated collection development were processed and recommended for approval by the systems.
- NYSILL/RML Library Service Coupons for interlibrary loan among medical libraries were distributed by the State Library, and the use of the coupons was monitored by the reference and research library resources systems.

Task 2.c

Seek additional State funds for support of library systems, for strengthening the research collections of the major research libraries participating as resource libraries in the NYSILL program, and for conservation of library research materials.

Accomplishments

As a result of enactment of Regents 1986 legislative proposals, $53.4 million was appropriated in FY 1986 for public library systems, including $5.6 million for The New York Public Research Libraries, and $6.3 million for central libraries. An additional $3 million was appropriated for reference and research library resources systems and $328,000 for reimbursement to NYSILL resource libraries for interlibrary loan transactions.

In addition, each of the major academic research libraries received grants from a $1,131,332 collection development program by agreeing to participate in interlibrary loan and in planning regional collection development programs.

Task 2.d

Conduct a systematic review of public library system plans of service to examine current practices, update when appropriate, and suggest options for the future.

Accomplishments

Two library system plans of service are in the process of revision: Chautauqua-Cattaraugus and Suffolk.

Task 2.e

Cooperate with public library systems, library edu-

cators, and other appropriate groups to assess continuing education needs and carry out recommendations of the Statewide Continuing Library Education Advisory Committee.

Accomplishments

The Statewide Continuing Library Education Advisory Committee, formed to address continuing education priorities, formulate action plans and advise the State Librarian, continues to address issues as they arise. The Committee, through the continuing library education consultant in the Division of Library Development, provides liaison to the New York Library Association Continuing Education Committee, which develops and arranges the CE activities at the Annual NYLA Conference.

The Resources Person Referral File, a file of quality resource persons available to aid library systems in continuing education activities, has been expanded to include speakers who specialize in school library system topics.

The consultant monitors CE workshops throughout the State and helps in developing workshops where a need is perceived. During FY 1986 the New York State Library offered the following continuing education workshops: Institution Library Workshop, November 7-8, 1985; School Library Systems Conference, March 19-21, 1986; Outreach-Institution Workshop, June 5-6, 1986; Library Trustee Institute, September 12-13, 1986; and Government Documents Workshop, September 18-19, 1986. In addition, the consultant assisted in the development of the following LSCA-funded workshops — Clinton-Essex-Franklin Library System Regional Trustee Workshops and a reference and business workshop; Nioga Library System Rural Librarian Workshop; Rochester Regional Research Library Council Management Skills for Librarians Workshop; South Central Research Library Council series of two Automation and Technology Workshops; and the Westchester Library System Conference on Youth Services.

The South Central Research Library Council, through an LSCA grant, produces a monthly calendar, SPECTRUM, which provides convenient and timely notice of continuing education events for library staff members in Upstate New York. SPECTRUM has a readership of 3,750. In 1986 this calendar was made available by electronic mail through the use of ALANET and the New York Libraries affiliate NYLINE.

Task 2.f

Strengthen major urban resource libraries as Federal funds become available.

Accomplishments

The seven Major Urban Resource Libraries (MURLS) participating in the $503,879 program were: Brooklyn Public Library, Buffalo and Erie County Public Library, The New York Public Library, Onondaga County Public Library, Queens Borough Public Library, Rochester Public Library, and Yonkers Public Library.

Brooklyn purchased 6,953 items for reference collections in the library's nine major divisions.

Buffalo and Erie County purchased 1,355 books in such areas as architecture, health, technology, business, urban development, social problems, natural history and child abuse. 525 cassettes and 96 compact discs were purchased for the visually handicapped.

The New York Public Library purchased 5,745 items and entered them into the MILCS online database to enhance the in-depth subject collections and foreign language collections at the Central Library for The Branch Library System.

Onondaga County Public Library added 81 telephone directory microfiche and 377 videocassettes.

Queens purchased 2,285 items in the areas of physical, biological and social sciences, music, literature and literary criticism, newspapers, law and fine arts.

Rochester purchased 2,294 items to augment collections of the science, literature, art, education, business and audiovisual divisions of the central library.

Yonkers strengthened reference services by purchasing subscription indices for financial information and government documents.

State aid through Education Law and the Executive budget provided $638,000 for the Schomburg Center for Research in Black Culture, which is part of the Research Libraries of The New York Public Library. Funds were used for specialized staff and materials to further strengthen this unique statewide resource.

Task 2.g

Reexamine the NYSILL program; cooperate with OCLC, RLIN and UTLAS; and make recommendations for future network development.

Accomplishments

In July 1984, the state librarian appointed an Advisory Committee to assist the State Library in a major study for the Redesign of Interlibrary Loan in New York State. Plans were completed for the study, and Ringgold Management Systems Inc. was engaged as the consultant to do a nine-month study beginning May 1, 1985. A final report was submitted on January 31, 1986.

The State Library continues to search NYSILL requests through RLIN via its search-only terminal. Six of the NYSILL referral libraries are RLIN members.

Task 2.h

Expand point-to-point interlibrary loan access and remote use of the State Library's online catalog.

Accomplishments

The State Library's online catalog has been made available to several classes of remote users since 1982. The NYSILL Telecommunications Network was upgraded to microcomputers from teleprinters in July 1985, thus providing all NYSILL transmission sites with direct access to the State Library's online catalog. In addition to accessing the online catalog, the NYSILL transmission sites, since February 1986, can automatically convert a bibliographic citation from the catalog to a NYSILL request. This speeds interlibrary loan service as requests are sent directly to the stacks for retrieval upon receipt at the State Library.

The upgrade of NYSILL Telecommunications Network to microcomputers has provided each NYSILL transmission site the capability of referring an interlibrary loan request to up to four other NYSILL transmission sites or to four Regional Medical Library Network resource libraries in New York State. This capability has replaced the NYSILL Point-to-Point program which was initiated in 1982.

Objective 3. Improved service to disabled persons.

Task 3.a

Encourage use of regional library services to blind and visually handicapped persons.

Accomplishments

The New York State Library and The New York Public Library provide services to blind and physically handicapped persons throughout New York State. The 22 public systems cooperate with the regional libraries to make their services available to all citizens of the State eligible for these services.

The New York State Library for the Blind and Visually Handicapped, one of 56 regional libraries in the nation, provides books in special media, appropriate playback equipment and other library services to visually and physically handicapped persons. During 1985/86 the Library for the Blind and Visually Handicapped circulated 521,863 items to 21,811 individuals at home and in 1,490 institutions. The Library was assisted in providing services by a growing volunteer program..

Other services provided by the New York State Library included:

- A quarterly newsletter (in Braille, cassette and large-print editions) sent to more than 15,000 readers, libraries and other agencies.
- A toll-free recording device received 10,237 inquiries and service requests, and a recorded information tape, which includes the LBVH quarterly newsletter, responded to 2,609 calls.
- A talking terminal provided current information to readers statewide over a toll-free telephone line.

Specialized services provided to 658 public and private schools included consultation to establish service for the visually impaired, arranging for special needs, and immediate response to school and student requests.

Task 3.b

Strengthen lines of communications between the regional libraries and other libraries, agencies and patrons and encourage libraries to cooperate with other organizations to extend and improve services to disabled persons.

Accomplishments

The assignment of playback equipment and inventory accountability are major responsibilities of the State Library as the Machine Lending Agency. Assisting with these activities are 20 Machine Sublending Agencies. Field visits were made to plan promotion and to augment service with sublending agencies.

Services provided by The New York Public Library included:

- Taping of books for loan
- Newsletters in large print and Braille
- Training patrons in the use of a Kurzweil Reading Machine

In addition to the services from libraries for the blind, two public library systems offered radio reading programs as a result of Title I grants: Chautauqua-Cattaraugus ($28,500); and Ramapo-Catskill ($19,000). These two programs reached 763 households with local news and special programming.

Task 3.c

Ensure maximum use of the network of 38 Kurzweil Reading Machines by assisting libraries in developing programs for their use.

Accomplishments

The New York State Library has cooperated with the 22 public library systems in the State-funded Kurzweil Reading Machine Program, which provided each system a minicomputer with an optical scanner that translates written words to synthetic speech. Use of the KRM has plateaued in recent years, in part because of the development of other electronic aids for the blind and visually handicapped. Dedication to the needs of the print handicapped by library staff generally produces higher KRM use. Examples

of this are in the Onondaga County Public Library, Olean Public Library (Chautauqua-Cattaraugus Library System), The New York Public Library, Brooklyn Public Library, and Queens Borough Public Library.

Task 3.d

Maintain a full range of services and a strong collection of special media materials for blind and visually handicapped persons.

Accomplishments

A collection of 382,422 special media items was maintained by the New York State Library for the Blind and Visually Handicapped (LBVH). A collection of 324,813 was maintained by The New York Public Library for the Blind and Physically Handicapped (excluding collections at two subregional libraries, which are the Nassau Library System and the Suffolk Cooperative Library System).

The automated circulation system at the New York State Library for the Blind and Visually Handicapped proved capable of sending out as many as 9,000 books per day which, while more than could be handled, demonstrated the capability for future growth. More than 6,800 talking book machines were loaned in FY 1986, a reserve of playback equipment was created and machine repair workshops were offered to sublending agencies. LBVH librarians made 16 field visits to sublending agencies.

Task 3.e

Cooperate with agencies which serve hearing-impaired persons to provide to library systems information about deafness and its implications, along with resource materials to help meet the library information needs of persons with hearing impairment.

Accomplishments

The Finger Lakes Library System, as a follow-up to the previous year's extensive survey to determine the needs of the hearing impaired in its service area, conducted two workshops to promote the use of services to the hearing impaired. These two workshops — one for service providers and one for the public — were repeated five times, once each in each county served by the System. The System also worked with a variety of agencies and associations to sensitize them to the needs of the deaf and the equipment available to assist them.

The State Library also cooperated with St. Mary's School for the Deaf in Buffalo to make information and technical assistance available to librarians.

Objective 4. Improved service to adult learners and others who use or could use the library as a resource for general, cultural or vocational education.

Task 4.a

Provide technical and consultant services to public libraries, emphasizing staff development and continuing library education directed at improving adult services.

Accomplishments

The continuing library education consultant assisted many library systems in the planning, securing of resource persons, and execution of continuing education activities through on-site visits and telephone consultation. Workshops listed under Objective 2 — Task e were a major thrust of the consultant's activities.

Task 4.b

Identify and secure additional sources of funding to assist local libraries to improve and increase services to adult learners.

Accomplishments

Systems sought and obtained small grants from local agencies and conducted local fundraising events to supplement and strengthen their adult learner programs. Several systems have received grants from the Gannett Publishing Co. to support literacy services, and others have received B. Dalton grants for the same purpose. Clinton-Essex-Franklin Library System has been particularly aggressive in obtaining funds from both the National Endowment for the Humanities and the New York State Council on the Arts to provide programs and educational opportunities for adults.

Task 4.c

Encourage cooperation between libraries and other cultural and educational institutions and community-based organizations.

Accomplishments

Many of the activities funded through LSCA require close cooperation between libraries and other cultural and educational institutions and community-based organizations. One prime example of such networking is the Adult Independent Learner/Job Information Center Program. Eighteen systems received LSCA Title I grants totalling $510,252 to provide job, career, and education information and advisory services to 286,600 clients in their local communities.

Libraries in New York State which offer adult learning and job information services forge solid links with both traditional and nontraditional local, region-

al and statewide educational institutions in order to provide information to assist adults in continuing their education. LSCA funds have promoted the continued growth of networking between local libraries and education institutions like local adult basic education programs for adults trying to obtain a high school diploma; Education Opportunity Centers; two- and four-year colleges; and nontraditional statewide programs such as Regents College Degree and Empire State College. Librarians collect, store and dispense information to clients about the adult education opportunities available to them through printed directories like the Mid-York Library System's "Directory of Lifelong Learning Opportunities" or through online databases such as Nassau Library System's "Education Hotline" or "Learning Connection Hotline."

Several of the projects, including those at The New York Public Library and the Mid-Hudson Library System, employ librarians who provide individual learners advisory services and assist clients to obtain their degrees or learn new skills. Librarians work closely with local education programs to publicize all the options available to adults for continuing their education. In addition to promoting local lifelong learning opportunities, several project libraries have offered their own continuing education programs for adults. The Nassau Library System has started a series of "Independent Scholars Roundtables" in local libraries which has drawn national attention.

In addition to their work with educational institutions, project librarians also create and maintain strong links with local government agencies, service groups and community-based organizations working with the unemployed and underemployed. Librarians often are members of, or even lead, communitywide economic development and employment committees. Such communitywide committees are composed of representatives from groups like Private Industry Councils, Job Training and Partnership Act agencies, health and social welfare services, voluntary action centers, chambers of commerce, employment centers and agencies, senior service groups, cooperative extension services, displaced homemakers, professional education and counseling associations, etc.

Project staff use these cooperative links not only to collect up-to-date information about employment and retraining opportunities but also to inform other groups about the library's services and to encourage agency representatives to use the resources and to refer clients to the library. In addition to strengthening library materials collections, LSCA Title I monies also provided services such as individual career counseling and resume advisement; programs on the job search and career and employment opportunities; job clubs; programs to assist clients in starting small or home-based businesses; access to computerized guidance systems such as SIGI Plus and GIS; and employment-related information and referral systems such as JOB LINK, a computerized database that lists local job openings in Nassau County.

Several library systems offer employment services to special target groups. The Clinton-Essex-Franklin Library System conducted over 68 hours of programming related to job-seeking skills for nearly 1,000 inmates at five State correctional facilities. Each facility was visited every 4-6 weeks. The Finger Lakes Library System aimed its job information services at local farmers, and the Mohawk Valley Library Association tried to reach clients in smaller communities who wanted to start home-based businesses. The Mid-York Library System served clients through regular cable television programs broadcast throughout a three-county area.

Task 4.d

Seek State support to institutionalize and expand the EIC program.

Accomplishments

There are now seven State-supported Education Information Centers operating in New York. LSCA funds have been used to supplement these centers. In 1986, the Brooklyn Public Library strengthened its EIC with a $64,668 grant which enabled it to provide ongoing reference and special needs services to 107,945 persons. Brooklyn was able to acquire new materials on the subject of education and career and job information; provide facilities, equipment and services to patrons with physical and mental disabilities; provide up-to-date resources of interest to patrons who have handicapping conditions; provide referrals to outside agencies to meet the needs of patrons; and provide individual and group counseling within the scope of the Education Information Center. EIC staff conducted 61 class visits and tours with a total attendance of 14,231.

Task 4.e

Seek State aid funds to expand public library services that assist adults to increase their literacy skills.

Accomplishments

In April 1986, State aid legislation was passed which authorized $400,000 for discretionary Adult Literacy Services grants to public libraries. In order to be eligible for these grants, libraries were required to cooperate with schools, colleges, volunteer programs and/or community-based organizations offering literacy services. The lengthy process of establishing

regulations and preparing and reviewing application documents meant that no projects were approved prior to October 1, 1986.

Task 4.f

Review outreach needs and services as a part of the comprehensive study of library systems and services; revise definitions and programs as needed.

Accomplishments

Although the system study was not begun during FY 1986, a staff person was hired and preliminary work for the study was accomplished. Outreach needs and services will be a component of the comprehensive study of library systems.

Objective 5. Development of library service to residents of institutions.

Task 5.a

Provide staff assistance and consultant service for the planning and development of institution library programs, emphasizing basic support from the agencies which administer the institutions and backup services from the agencies and library systems.

Accomplishments

LSCA funds provide two types of services to institutions. A consultant aids institution administrators, librarians and others through consultant services. Grants are awarded to State agencies operating residential institutions.

This year the program:

- Assisted State institutions through 4 visits and 250 telephone calls.
- Coordinated the free photocopying of legal materials with the State law librarian; 32,000 photocopies were provided to inmates.
- Continued work with the coordinator of library services and librarians in the Department of Correctional Services concerning information and referral services to inmates scheduled for release and advised on improvement of library services.
- Continued work with Division for Youth personnel in the development of library services in facilities.
- Released State grants totalling $320,000 for public library service to inmates of State correctional facilities.
- Granted LSCA funds totaling $90,000 to the New York State Department of Correctional Services, Office of Mental Health, Division for Youth and Office of Mental Retardation.

Task 5.b

Provide information on effective institution library services and disseminate information through conferences and workshops.

Accomplishments

Annual Reports for 1985-86 are being collected from State institutions libraries and summarized for publication in the *Institution Libraries Statistics*.

The consultant arranges a yearly workshop for library and administrative personnel of institutions, the New York State Library, and others concerned with institution library service. Approximately 100 people attended the Institution and Outreach Library Workshop held on June 5-6, 1986 in Albany, New York. The workshop focused on the theme "We Have A Lot to Offer: Building on Each Other's Strengths."

Task 5.c

Encourage libraries to pay particular attention to the needs of elderly persons in institutions.

Accomplishments

While on field visits, the consultant underscored that it is important that institution librarians be aware of and provide resources to meet the specialized information needs of elderly persons.

Objective 6. Effective use of technology to improve services and efficiency.

Task 6.a

Assist cooperative regional planning that supports resource sharing and services.

Accomplishments

During 1986, $1.3 million in State funds were allocated for the development of a program to build regional bibliographic databases and to improve interlibrary resources sharing in New York State. Nine regional programs, representing 31 library systems, carried out projects that converted over 1 million bibliographic records into machine-readable form, provided improved access to the various national databases, extended and improved telecommunications among libraries and conducted several studies to improve automated services.

For more information on specific LSCA projects which contributed to this goal, see the accomplishments under c below.

Task 6.b

Link the various automated (and generally dissimilar) library applications in the State, providing access to bibliographic and holdings records throughout the State.

Accomplishments

No projects in this category.

Task 6.c

Further develop machine-readable and bibliographic location files for monographs and serials.

Accomplishments

1986 projects furthering database development objectives were:

Monographic Data Bases:

- The Capital District Library Resources Council converted 13,000 bibliographic records of 15 public, academic, school and special libraries in the Capital District region into the OCLC database.
- The Long Island Library Resources Council converted a total of 13,333 bibliographic records from six Long Island academic libraries into the OCLC database and also provided for creation of a Long Island CD-ROM regional catalog of the bibliographic and holdings records of the Nassau Library System, Suffolk Cooperative Library System and the Long Island Library Resources Council's OCLC libraries.
- The New York Metropolitan Library Resources Agency, Inc. (METRO) converted 189,631 bibliographic records for 13 member libraries and improved access to member libraries by enhancing the Metro interlibrary loan clearinghouse. OCLC, MILCS and RLIN databases were used. A special study was also conducted to identify retrospective conversion priorities, extent of retrospective conversion and extent of unconverted records in the region.
- The MILCS bibliographic database, which provides common access to bibliographic records and information concerning the holdings of the cooperating libraries within the New York Metropolitan region, has been increased by over 86,323 titles and now consists of 2.4 million full bibliographic records and provides 13.4 million holdings symbols. MILCS participants are using the online network and The New York Public Library's ONLICATS Database extensively on a daily basis for cataloging and/or interlibrary loan functions.
- The Buffalo and Erie County Public Library continued, as part of a long-range regional program, to convert titles of the Central Library into machine-readable form using the OCLC database and their Total Online Library Information System (TOLIS) database. Over 85,512 titles were added, bringing the total to 409,055 bibliographic records. The total database when completed is expected to include over 950,000 records. In addition, 29,124 records from the Chautauqua-Cattaraugus Library System were converted using the OCLC system.
- The Finger Lakes Tri-System ComCatalog on Brodart expanded and completed the joint retrospective conversion efforts carried out over the last five years by the Four County, Finger Lakes, and Chemung-Southern Tier library systems. 17,161 new titles were added to the database. In addition, 250,000 OCLC records and 175,000 Data Phase records were tape loaded into the Brodart system.
- The Mohawk Valley Library Association (MVLA) and the Southern Adirondack Library System (SALS) combined efforts to build a multi-purpose machine-readable database of monographic holdings. During the project 345,000 titles were converted into a MARC format with holdings statements and local call numbers attached to the records.
- A grant to the Ramapo-Catskill Library System facilitated access to library materials through the sharing of bibliographic and holdings information in the Southeastern New York Library Resources Council area. The grant to the library system covered the cost of converting 150,000 SENYLC records into the regional database and produced a 200,000-holdings union catalog for distribution to six school library system headquarters and public and library resources systems' interlibrary loan offices.
- The Westchester Library System converted 60,000 bibliographic records of the system's union catalog into the UTLAS database.
- The aim of the CENTRO retrospective conversion project was to make significant progress in converting the records of four academic libraries. 23,034 records were converted.
- The objective of North Country's conversion project was to convert monographic holdings of Jefferson Community College on the OCLC system. 12,000 records were entered.
- The Rochester Regional Research Library Council's conversion and interlibrary resources sharing project had as its goal the improvement of access to library resources through the development of bibliographic databases and the improvement of resource sharing. 32,372 bibliographic records were converted on OCLC as the result of this project.
- The Western New York Library Resources Council's monographic conversion project had two goals: (1) develop regional access to the holdings of libraries in Western New York through the OCLC system and (2) provide access to the holdings of one school library system, the first in the region. 30,441 records were converted.

Serials Database: Ten projects in 1986 added 114,054 records to the Union List of Serials, bringing the total

to over 600,000 machine-readable bibliographic and holdings records. The projects are as follows:

- The Capital District Library Resources Council converted serials records of 255 school libraries' collections. 1300 titles and 12,000 holdings statements were entered into the OCLC database.
- The Long Island Library Resources Council (LILRC) added four new school library systems and 264 school libraries in the Long Island Union List of Serials based on OCLC. Activities included profiling, field workshops for training and the entry of 11,000 local data records.
- The METRO union list of serials is developing as part of a multi-year plan. The ultimate objective of the plan is to bring together all of the serial resources of the region and to make them potentially accessible in online and offline formats. 2,558 new records and 36,614 updates or holdings were added to the database records.
- The general aim of the North Country Union List of Serials project was to input the serials holdings of the five school library systems. Each participating SLS library was profiled and 8,399 local data records were input for these libraries into the OCLC database.
- The purpose of Rochester Regional Research Library Council's project was to ensure efficient resource sharing within the Rochester region and the State through quality control of the regional union list of serials. In carrying out this objective, this grant funded the conversion of 80 new entries and 10,394 updates or holdings statements.
- The goal of the South Central Research Library Council ULS project was to increase the opportunities for resources sharing among all types of libraries by adding the serials holdings of school libraries to OCLC. Each SLS and all participating member libraries were profiled, 14,046 updates or holdings statements were added, and two offline paper products (a subgroup list of school library systems and an individual list of the systems for each school library) were provided.
- In the Southeastern region a project created an updated union list of serials in machine-readable format and developed procedures for the continual updating of the union list of serials. Toward this end, 10,392 new bibliographic records were entered into the database. 371 public and school libraries were profiled for entry into OCLC.
- The tapeload of the Western New York Library Resources Council's existing union list of serials to OCLC was accomplished. 34,323 local data records were added and 2,366 records were edited as part of this project.
- In conjunction with the conversion of its existing union list to OCLC, the Western New York Library Resources Council upgraded the usefulness of the list through quality control and the improvement of records to MARC formats and ANSI holdings standards. 1,392 new records and 4,434 records from the existing database were edited and updated. In addition, approximately 1,000 microform holdings were updated. A printout and a fiche copy of the ULS was provided for each participating library.
- The goal of the third project in the Western New York region was the addition of school library periodical holdings to the regional Union List of Serials. 7,104 new titles and 173 updates or holdings were input as the result of this project. A microfiche copy of the ULS was provided for every school library in the region.

Task 6.d

Sponsor appropriate studies to plan and design the technological component of a coordinated resource sharing and document delivery system.

Accomplishments

No activity in this area.

Task 6.e

Integrate LSCA funds, State aid for regional bibliographic and database development and other resources effectively.

Accomplishments

State legislation passed in 1984 and expanded in 1986 established grants to accelerate the conversion of data for regional automated databases and to provide for improved interlibrary resources sharing. Automation funds are available to convert records held by public academic, school and special libraries through library systems. In 1986, the nine reference and research library resources systems and 22 public library systems received approximately $3 million to build regional bibliographic databases, improve access, develop plans and conduct studies.

Task 6.f

Encourage and assist libraries of all types to make appropriate use of computers, including the experimental use and testing of new technological applications.

Accomplishments

Since 1982, Library Development has encouraged library systems to apply for a one-time microcomputer literacy project. The overall goal of this program is to insure equality in the educational process for citi-

zens of New York State by providing computer awareness and computer literacy programs in their public libraries. In 1986, one award in this category was made to the Four County Library System. That project focused specifically on the adult, out-of-school population who do not otherwise have access to microcomputers. Seven microcomputer packages were purchased, and instructions and hands-on experience with various microcomputer applications were provided to 200 users.

The South Central Library Resources Council received an LSCA grant for Project Mercury, which provided for the installation of communications software in the Chemung-Southern Tier Library System to enhance regional interlibrary loan.

Objective 7. Construction and renovation of library facilities to improve service in systems and member public libraries and to provide access for the physically handicapped.

Task 7.a

Seek appropriations for State aid for library construction, renovation and/or modification of public library buildings.

Accomplishments

Two million dollars in State aid in 1986 was allocated to 129 public library construction projects located within the 22 public library systems. More than 75 percent of these projects are renovations to make library facilities more efficient and attractive through general improvements or increased energy efficiency and/or accessibility for physically handicapped persons.

Four million dollars in additional State aid is being sought for some 171 public library construction projects spread across the 22 public library systems, as recorded in a September 1986 construction needs assessment survey conducted by the Division of Library Development.

Task 7.b

Use Federal LSCA Title II and other funds as available to subsidize library construction and renovation.

Accomplishments

FY 1986 and FY 1987 allocations totalling $2.6 million generated 36 applications offering $11.1 million in matching funds. These applications are being reviewed by the Division of Library Development staff in accordance with the LSCA Title II *Annual Program Statement*. Notifications of grant awards totalling the $2.6 million will occur in February 1987. The size of most of the proposed project costs make total reliance on the limited State aid program unrealistic.

Task 7.c

Conduct an annual construction needs assessment within the State.

Accomplishments

Data supplied on September 30, 1986 by public libraries through their system headquarters in an annual statewide survey indicate that it would cost a minimum of $116.8 million to provide adequate facilities for some 171 public libraries throughout the State.

Task 7.d

Continue the State-level and system-level planning processes to gain maximum value for construction expenditures.

Accomplishments

As required by Education Law 273-a and as implemented by Commissioner's Regulations 90.12, each public library system maintains a set of standards and procedures in accordance with which the system and its member libraries plan for adequate and maximum value buildings.

Objective 8. Improved school library media service to students and teachers.

Task 8.a

Work with the Bureau of School Library Media Programs for the sound development of school library systems.

Accomplishments

Formula-based aid factors were added to the State legislation, thereby increasing monies for expanded system services to member libraries and their patrons.

Task 8.b

Strengthen liaison between the Bureau of School Library Media Programs and the Library Development Division.

Accomplishments

The school library system coordinator and assistant work in each office, attend all staff meetings of each unit and report regularly. Field trips to individual and school library systems and to regional meetings and conferences are made by the coordinator and assistant and by staff from the Bureau of School Library Media Programs.

Task 8.c

Sponsor school/public library conferences to disseminate information on topics of current interest to library personnel.

Accomplishments

Library partnerships were promoted through participation in numerous regional and statewide conferences, workshops and institutes. Such conferences are the annual statewide "Parents As Reading Partners" conference, The Humanities in Education, and Learning Technologies Fair. Programs to improve school library service and school involvement in networking were provided at the annual conference of the New York Library Association.

In the absence of a full-time youth services consultant, the DLD liaison works with the regional and local school library and youth services personnel. One meeting a year is held between State Library staff and the New York Library Association Youth Services Section representatives to discuss mutual concerns.

The liaison also disseminates information on notable children's and young adult films, books, filmstrips and other library resource award winners to school and public librarians.

Task 8.d

Foster cooperation between school and public libraries in appropriate programs of service to children and parents.

Accomplishments

An associate in library services, who is the coordinator of the school library systems, and a half-time assistant in library services provide consultant information on schools to the staff of Library Development and consultant information on other types of libraries to the Bureau of School Library Media programs promoting cooperation between public and school libraries.

In March 1986, a conference was held in Albany for over 200 educators and librarians to explain the administration and development of effective school library system services.

Objective 9. Strengthening of the resources and services of the State Library to assure (a) the highest quality reference and research library service to the Executive, Legislative and Judicial branches of State government; (b) efficient and effective interlibrary loan, networking, support and specialized library services to libraries and clienteles; and (c) planning, coordination, leadership and State financial participation in the provision of library service to all the people of New York State.

Task 9.a

Use the 5.5 million item State Library collection, the resources of nine referral libraries and a computer-based telecommunications network to improve statewide network performance and to fill requests not satisfied by regional systems.

Accomplishments

The State Library received and researched 83,323 interlibrary loan requests, filled 31,568 requests (37 percent) and forwarded 29,352 (35 percent) to the contract referral libraries.

Task 9.b

Maintain collection and staff strengths at the Library which will insure timely and effective response to interlibrary loan requests.

Accomplishments

The State Library added 17,893 new monographs, 101,500 serial issues in 15,770 titles and 205,962 microforms units to the research collections (all purchased with State funds). The State budget for acquisitions was $1,870,000.

High productivity was maintained through use of technology, management improvement and reallocation of staff.

Task 9.b.1

Improve reference staff quality through updating of skills and knowledge; improve timeliness of response to priority clients; insure that collection development practices are current and followed.

Accomplishments

Two staff development programs were held on microform holdings and the new serial system.

Eight librarians in Reference Services were trained in the use of online databases.

The resource sharing agreement with SUNY at Albany continued. The resource sharing agreement with the Department of Health Library was expanded to include cooperation in the processing of State documents at the Department of Health Library. A resource sharing agreement was signed with Albany Law School. These agreements result in more efficient service to the public.

Task 9.b.2

Provide persons incarcerated in New York State

with timely and effective access to legal materials necessary to determine their legal rights.

Accomplishments

A total of 1,277 letters from prisoners were answered. These contained 2,968 requests for citations that resulted in 32,509 photocopied pages. A brochure describing this program is being developed and will be sent to the public library systems.

Task 9.b.3

Increase State access to newspaper resources by cataloging newspaper holdings and statewide planning.

Accomplishments

Thirty shared-cost grants were approved resulting in the preservation of 42 newspaper titles. The project to catalog and inventory over 3,000 newspaper titles, funded with a HEA II-C grant, was completed. With a grant from NEH, two of the State's regions will begin a new bibliographic control project for their newspapers as the first stage of the State Library's participation in the U.S. Newspaper Program.

Task 9.c

Use new techniques to improve network performance and provide access to information resources (such as computerized databases) that are too costly or too new to be available as local resources in all areas.

Accomplishments

Over 4,308 searches were provided from over 300 computerized databases.

Bibliographic data and holdings information for 5,486 serial titles held in the State Library were added to the national serials database under the CONSER project. In addition, 611 titles owned by other libraries were also added as part of the New York State Union List program.

Task 9.d

Support statewide public information programs designed to increase awareness of library services.

Accomplishments

Twenty-nine press releases were prepared and distributed to the State and national public and library press. Four radio interviews were given. Materials were distributed for Martin Luther King Day, National Library Week and ALA Legislative Day. Libraries were represented on the Regents Advisory Committee on Learning Technologies, the Department Advisory Council for the Job Training Partnership Act implementation, the Advisory Council on Education and the Arts, and Literacy Coalition planning national campaign.

A statewide business information directory was compiled for distribution at the two New York State preliminary White House Conference on Small Business meetings.

Three articles appeared in *Library Hotline* and four articles each appeared in *Library Journal* and *American Libraries*. Six newsletters were sent via the NYLINE electronic mail service.

A statewide meeting of library system public relations personnel was convened in conjunction with the New York Library Association annual conference. Exchange of newsletters, press releases and program information was reevaluated and continued. The Public Relations Roundtable continues under the auspices of the New York Library Association.

A national survey of the follow-up activity related to the 1979 White House Conference was prepared, distributed and compiled for the White House Conference on Libraries and Information Services Follow-up Steering Committee. Copies of the report were distributed nationally. The entire series is now available through ERIC.

Task 9.e

Seek State funds for services heavily dependent upon LSCA funds.

Accomplishments

Since 1981, a number of new State aid programs in support of library services have been established in areas where LSCA funds are also targeted. Among these are the Coordinated Outreach program (serving the educationally disadvantaged, ethnic and minority groups, unemployed, persons in underserved ares, blind, physically handicapped, aged and institutionalized); the Regional Bibliographic Databases and Interlibrary Resources Sharing (automation) program; State aid for State Correctional Facilities; and Literacy.

Task 9.f

Provide consultant service and staff assistance for planning and development of libraries.

Accomplishments

The Division of Library Development is responsible for library development in New York State. The Division promotes library development and the coordination and improvement of services in 729 public libraries, 78 regional library systems, 158 libraries in institutions, 266 academic and research libraries and 1,278 special libraries. FY 1986 LSCA activity included support for the following programs:

- The 9th Annual Library Trustee Institute designed to provide new library trustees the opportunity to obtain information about New York State libraries and trusteeship and to meet and share library experiences with other trustees
- Providing special consultant and technical assistance services to 22 public libraries designated to receive funds allocated for Special Legislative Projects
- Eleven Continuing Library Education workshops and institutes for librarians and trustees; more than 900 people participated.
- Two hundred fifty-one consultant visits to public library systems and reference and research library systems in reference to continuing library education, LSCA library projects, institution service programs, resource sharing, telecommunications, central library development, outreach programs, work with library trustees and citizens library groups and other special programs.

Task 9.g

Emphasize the review of plans of service as a means of exercising more current and systematic planning and evaluation.

Accomplishments

Reviewed annual applications, budgets and plans for the use of State aid for the 22 public library systems and 9 reference and research library resources systems. Reviewed annual applications, budgets and plans for designated aid projects: 2 from The New York Public Library Schomburg Center for Research in Black Culture and the Library for the Blind; 1 from each — Brooklyn Public Library, Buffalo and Erie County Public Library and Nassau Library System; 22, Coordinated Outreach Services; 22, Central Library Programs; 9, Regional Data Base Programs; 3, Indian Library Programs; 26, Special Legislative Grants; 16, Public Library System Programs for service to inmates of State Correctional Institutions; 9, Coordinated Academic Collection Development Programs; 33, Preservation and Conservation of Research Materials Programs; and 48, School Library System Programs.

Began initial planning for revision of system plan of service outlines for public library systems and reference and research library resources systems.

LSCA PROGRAM MANAGEMENT

The chief responsibility for the LSCA program and its administration is assigned to the Division of Library Development. The Director of Library Development, the LSCA Program Officer and the Assistant Commissioner for Libraries meet with the 12-member LSCA Advisory Council, which is representative of public school, academic, special and institution libraries, including libraries serving handicapped persons. Also represented on the Council are users of libraries, including those representing disadvantaged persons.

The Advisory Council met in December, January and March to review and advise on the development of the FY 1986 plan, the evaluation and reporting for FY 1985, and the State long-range program and the annual program statements for FY 1987.

On December 4, 1985 the Council met to review the first drafts of the FY 1987 program documents.

On January 29, 1986 the Council met to give final approval to the FY 1987 program documents and to evaluate 12 FY 1985 projects serving the handicapped and the institutionalized. The Council formed two teams of Council members and staff for this evaluation process.

On March 12, 1986 the Advisory Council received a major report on and demonstration of the NYLINE project, discussed the MURLS program, and reviewed and approved the final narrative report for FY 1985.

Some 5,000 copies of the long-range program, *Library Service to the People of New York State*, were distributed. Copies of this and the *Annual Program Statements* were mailed to all library systems in March 1986.

The New York State Library is a primary repository for publications pertaining to the history and development of New York State and would appreciate notification from librarians, authors and historical societies of publications available by purchase or gift. Correspondence should be directed to: Humanities Reference Service, New York State Library, Cultural Education Center, Albany, NY 12230

All articles in *The Bookmark* are published on the authority of the authors. They do not necessarily reflect the opinion of the editor or the policy of the State Education Department.

New York State Education Department
New York State Library
Cultural Education Center
Albany, New York 12230

NON PROFIT ORG.
U. S. POSTAGE
PAID
Albany, N.Y.
Permit No. 293

PRINTED BY THE UNIVERSITY OF THE STATE OF NEW YORK

88-7945
CAD # 89-033